

Report: WAAS PAN Report #49
Revision: 1
Revision Date: 9/4/2014

Change(s):

Table 12-4 to 12-7: The tables were revised because satellite range data during times that a G3 receiver went into faulted mode required further editing due to false range unboundings.

**WIDE-AREA AUGMENTATION SYSTEM
PERFORMANCE ANALYSIS REPORT**

Report #49

Reporting Period: April 1 to June 30, 2014

July 2014

**FAA/William J. Hughes Technical Center
NSTB/WAAS T&E Team
Atlantic City International Airport, NJ 08405
Website: <http://www.nstb.tc.faa.gov/>**

Executive Summary

Since 1999 the WAAS Test Team at the William J. Hughes Technical Center has reported GPS performance as measured against the GPS Standard Positioning Service (SPS) Signal Specification. These quarterly reports are known as the PAN (Performance Analysis Network) Report. In addition to the GPS PAN report, the WAAS Test Team also reports on the performance of the Wide-Area Augmentation System (WAAS). This WAAS PAN report, Report #49, covers WAAS performance during the period from April 1, 2014 to June 30, 2014.

The report shows results in accuracy, availability, coverage, safety index, range accuracy, WAAS broadcast message rates, GEO ranging availability, WAAS airport availability, WAAS CNMP analysis, WAAS reference station survey validation, and SQM.

A section on G3 receiver performance is included in this report. Twelve Novatel WAAS G3 receivers were setup at six existing WAAS reference sites with two receivers at each site in October 2013. The WAAS system will be upgraded to G3 receivers in preparation for a full constellation of dual civil frequency GPS satellites (L1/L5). This is the second report showing results on G3 receiver performance.

The following table shows observations for accuracy and availability made during the reporting period for CONUS and Alaska sites. The international sites are excluded from this table, but are included in the body of the report. LP service is available when the calculated Horizontal Protection Level (HPL) is less than 40 meters. LPV service is available when the calculated HPL is less than 40 meters and the Vertical Protection Level (VPL) is less than 50 meters. LPV 200 service is available when the calculated HPL is less than 40 meters, and the VPL is less than 35 meters. The NSTB sites, Grand Forks, Atlantic City, and Arcata, are outliers due to receiver quality issues, not the WAAS signal in space quality.

Parameter	CONUS Site/Maximum	CONUS Site/Minimum	Alaska Site/Maximum	Alaska Site/Minimum
95% Horizontal Accuracy (HPL <= 40 meters)	Atlantic City 1.454 meters	Denver 0.621 meters	Fairbanks 0.779 meters	Bethel 0.643 meters
95% Vertical Accuracy (VPL <= 50 meters)	Atlantic City 1.752 meters	Los Angeles 0.903 meters	Barrow 1.732 meters	Bethel 1.148 meters
LP Availability (HPL <= 40 meters)	Multiple Sites 100%	Grand Forks 99.94%	Barrow 99.90%	Multiple Sites 100%
LPV Availability (HPL <= 40 meters & VPL <= 50 meters)	Multiple Sites 100%	Grand Forks 99.94%	Bethel 99.97%	Barrow 99.83%
LPV 200 Availability (HPL <= 40 meters & VPL <= 35 meters)	Multiple Sites 100%	Oakland 98.66%	Anchorage 99.93%	Cold Bay 92.74%
99% HPL	Miami 17.992 meters	Kansas City 11.67 meters	Cold Bay 29.62meters	Fairbanks 14.273 meters
99% VPL	Oakland 32.776 meters	Memphis 21.009 meters	Cold Bay 39.067 meters	Anchorage 24.43 meters

TABLE OF CONTENTS

1.0	INTRODUCTION.....	1
1.1	Event Summary.....	4
1.2	Report Overview.....	13
2.0	WAAS POSITION ACCURACY.....	13
3.0	AVAILABILITY.....	30
4.0	COVERAGE.....	49
5.0	INTEGRITY.....	57
5.1	HMI Analysis.....	57
5.2	Broadcast Alerts.....	59
5.3	Availability of WAAS Messages (CRE, CRW, and AMR).....	60
5.4	Satellite Glitches.....	70
6.0	SV RANGE ACCURACY.....	72
7.0	GEO RANGING PERFORMANCE.....	81
8.0	WAAS AIRPORT AVAILABILITY.....	83
9.0	WAAS DETERMINISTIC CODE NOISE AND MULTIPATH (CNMP) BOUNDING ANALYSIS	
	136	
10.0	WAAS REFERENCE STATION SURVEY VALIDATION.....	139
11.0	SIGNAL QUALITY MONITOR (SQM).....	150
11.1	Alpha Metrics.....	150
11.2	Type Bias.....	151
11.3	PRN Bias.....	153
11.4	SQM Trips.....	164
12.0	G3 RECEIVER ANALYSIS.....	164
12.1	G3 Position Accuracy.....	164
12.2	G3 SV Range Accuracy.....	175
12.3	G3 SQM.....	180

LIST OF FIGURES

Figure 2-1 LPV 95% Horizontal Accuracy 18

Figure 2-2 LPV 95% Horizontal Accuracy 19

Figure 2-3 LPV 95% Horizontal Accuracy 20

Figure 2-4 LPV 95% Vertical Accuracy..... 21

Figure 2-5 LPV 95% Vertical Accuracy..... 22

Figure 2-6 LPV 95% Vertical Accuracy..... 23

Figure 2-7 NPA 95% Horizontal Accuracy 24

Figure 2-8 NPA 95% Horizontal Accuracy 25

Figure 2-9 LPV Horizontal Error Bounding Triangle Chart..... 26

Figure 2-10 LPV Vertical Error Bounding Triangle Chart..... 27

Figure 2-11 LPV 2-D Horizontal Error Distribution Histogram 28

Figure 2-12 LPV 2-D Vertical Error Distribution Histogram..... 29

Figure 3-1 LPV Instantaneous Availability 37

Figure 3-2 LPV Instantaneous Availability 38

Figure 3-3 LPV Instantaneous Availability 39

Figure 3-4 LPV 200 Instantaneous Availability 40

Figure 3-5 LPV 200 Instantaneous Availability 41

Figure 3-6 LPV 200 Instantaneous Availability 42

Figure 3-7 LPV Outages..... 43

Figure 3-8 LPV Outages..... 44

Figure 3-9 LPV Outages..... 45

Figure 3-10 LPV 200 Outages 46

Figure 3-11 LPV 200 Outages 47

Figure 3-12 LPV 200 Outages 48

Figure 4-1 LP North America Coverage for the Quarter 50

Figure 4-2 LPV North America Coverage for the Quarter 51

Figure 4-3 LPV 200 North America Coverage for the Quarter 52

Figure 4-4 RNP 0.1 Coverage for the Quarter 53

Figure 4-5 RNP 0.3 Coverage for the Quarter 54

Figure 4-6 Daily LPV and LPV 200 CONUS Coverage 55

Figure 4-7 Daily LPV and LPV 200 Alaska Coverage..... 55

Figure 4-8 Daily LPV and LPV 200 Canada Coverage..... 56

Figure 4-9 Daily RNP Coverage..... 56

Figure 5-1 SV Daily Alert Trend..... 59

Figure 5-2 SV Glitch Trend..... 71

Figure 6-1 95% Range Error (PRN 1 – PRN 16) – Washington DC..... 77

Figure 6-2 95% Range Error (PRN 17 – PRN 32) – Washington DC..... 78

Figure 6-3 95% Ionospheric Error (PRN 1 – PRN 16) – Washington DC 79

Figure 6-4 95% Ionospheric Error (PRN 17 - PRN 32) – Washington DC 80

Figure 7-1 Daily PA CRW GEO Ranging Availability Trend 81

Figure 7-2 Daily PA CRE GEO Ranging Availability Trend..... 82

Figure 7-3 Daily NPA AMR GEO Ranging Availability Trend..... 82

Figure 8-1 WAAS LP Availability at Airports in the US and Canada with GPS RNAV Instrument Approach Procedures..... 130

Figure 8-2 WAAS LP Outages at Airports in the US and Canada with GPS RNAV Instrument Approach Procedures 131

Figure 8-3 WAAS LPV Availability Airports in the US and Canada with GPS RNAV Instrument Approach Procedures..... 132

Figure 8-4 WAAS LPV Outages at Airports in the US and Canada with GPS RNAV Instrument Approach Procedures..... 133

Figure 8-5 WAAS LPV 200 Availability at Airports in the US and Canada with GPS RNAV Instrument Approach Procedures..... 134

Figure 8-6 WAAS LPV 200 Outages at Airports in the US and Canada with GPS RNAV Instrument Approach Procedures..... 135

Figure 10-1 Build W7.010 Antenna Positions Deltas from 6/28/14 OPUS Survey.....143

Figure 10-2 Build W7.010 Antenna Positions Deltas from 6/28/14 OPUS Survey.....143

Figure 10-3 Build W7.010 Antenna Positions Deltas from 6/28/14 OPUS Survey.....144

Figure 10-4 6/28/14 OPUS Survey Overall RMS Qualities144

Figure 10-5 6/28/14 OPUS Survey Overall RMS Qualities145

Figure 10-6 6/28/14 OPUS Survey Overall RMS Qualities145

Figure 10-7 6/28/14 OPUS vs. CSRS RSS ECEF Deltas146

Figure 10-8 6/28/14 OPUS vs. CSRS RSS ECEF Deltas146

Figure 10-9 6/28/14 OPUS vs. CSRS RSS ECEF Deltas147

Figure 10-10 6/28/14 CSRS Survey Qualities147

Figure 10-11 6/28/14 CSRS Survey Qualities148

Figure 10-12 6/28/14 CSRS Survey Qualities148

Figure 10-13 6/28/14 OPUS vs. Build W7.012149

Figure 10-14 6/28/14 OPUS vs. BUILD W7.012149

Figure 10-15 6/28/14 OPUS vs. Build W7.012150

Figure 11-1 Type Bias Average Trend152

Figure 11-2 PRN Bias Average for the Quarter.....155

Figure 11-3 PRN Bias Average Trend (PRN 1 – PRN 4).....156

Figure 11-4 PRN Bias Average Trend (PRN 5 – PRN 8).....157

Figure 11-5 PRN Bias Average Trend (PRN 9 – PRN 12).....158

Figure 11-6 PRN Bias Average Trend (PRN 13 – PRN 16).....159

Figure 11-7 PRN Bias Average Trend (PRN 17 – PRN 20).....160

Figure 11-8 PRN Bias Average Trend (PRN 21 – PRN 24).....161

Figure 11-9 PRN Bias Average Trend (PRN 25 – PRN 28).....162

Figure 11-10 PRN Bias Average Trend (PRN 29 – PRN 32).....163

Figure 12-1 LPV 95% Horizontal Accuracy167

Figure 12-2 LPV 95% Horizontal Accuracy168

Figure 12-3 LPV 95% Vertical Accuracy.....169

Figure 12-4 LPV 95% Vertical Accuracy.....170

Figure 12-5 LPV Horizontal Error Distribution Histogram.....171

Figure 12-6 LPV Vertical Error Distribution Histogram.....172

Figure 12-7 LPV 95% Horizontal Error Bounding Triangle Chart173

Figure 12-8 LPV 95% Vertical Error Bounding Triangle Chart.....174

LIST OF TABLES

Table 1-1 WAAS Service Levels 1

Table 1-2 PA Evaluation Sites..... 2

Table 1-3 NPA Evaluation Sites..... 3

Table 1-4 WAAS Performance Parameters 4

Table 1-5 Events..... 4

Table 1-6 WAAS Upgrades..... 11

Table 1-7 GUS Switchovers 11

Table 2-1 PA 95% Horizontal and Vertical Accuracy..... 15

Table 2-2 NPA 95% and 99.999% Horizontal Accuracy 16

Table 2-3 Maximum LPV Error Statistics 17

Table 3-1 99% Protection Level..... 32

Table 3-2 Quarterly Availability Statistics 33

Table 3-3 NPA Availability..... 34

Table 3-4 LPV and LPV 200 Outage Rate (Per 150 sec approach)..... 35

Table 3-5 NPA Outage Rates (Excluding FD/FDE)..... 36

Table 5-1 Minimum Safety Margin Index and HMI Statistics 58

Table 5-2 WAAS SV Alert..... 59

Table 5-3 Update Rates for WAAS Messages..... 60

Table 5-4 WAAS Fast Correction and Degradation Message Rates – AMR 61

Table 5-5 WAAS Long Correction Message Rates (Type 24 and 25) – AMR 61

Table 5-6 WAAS Ephemeris Covariance Message Rates (Type 28) – AMR 62

Table 5-7 WAAS Ionospheric Correction Message Rates (Type 26) – AMR 63

Table 5-8 WAAS Ionospheric Mask Message Rates (Type 18) – AMR 63

Table 5-9 WAAS Fast Correction and Degradation Message Rates – CRW 64

Table 5-10 WAAS Long Correction Message Rates (Type 24 and 25) - CRW 64

Table 5-11 WAAS Ephemeris Covariance Message Rates (Type 28) – CRW 65

Table 5-12 WAAS Ionospheric Correction Message Rates (Type 26) – CRW 66

Table 5-13 WAAS Ionospheric Mask Message Rates (Type 18) – CRW 66

Table 5-14 WAAS Fast Correction and Degradation Message Rates – CRE..... 67

Table 5-15 WAAS Long Correction Message Rates (Type 24 and 25) – CRE..... 67

Table 5-16 WAAS Ephemeris Covariance Message Rates (Type 28) – CRE..... 68

Table 5-17 WAAS Ionospheric Correction Message Rates (Type 26) – CRE 69

Table 5-18 WAAS Ionospheric Mask Message Rates (Type 18) – CRE 69

Table 6-1 Range Error 95% index and 3.29 Sigma Bounding..... 73

Table 6-2 Range Error 95% index and 3.29 Sigma Bounding..... 74

Table 6-3 Ionospheric Error 95% index and 3.29 Sigma Bounding..... 75

Table 6-4 Ionospheric Error 95% index and 3.29 Sigma Bounding..... 76

Table 7-1 GEO Ranging Availability 81

Table 8-1 WAAS LP, LPV, and LPV200 Outages and Availability 83

Table 9-1 CNMP Bounding Statistics 137

Table 10-1 WAAS Antenna Positions (OPUS IGS08) as of 3/26/14 140

Table 11-1 Alpha Metrics..... 151

Table 11-2 Type Bias Average for the Quarter 151

Table 11-3 Type Bias Average Since January 1, 2008 151

Table 11-4 PRN Bias Average for the Quarter 154

Table 12-1 PA Evaluation Sites for G3 Receivers..... 165

Table 12-2 PA 95% Horizontal and Vertical Accuracy for G3 Receivers..... 165

Table 12-3 Maximum LPV Error Statistics for G3 Receivers..... 166

Table 12-4 Range Error 95% Index and 3.29 Sigma Bounding 176

Table 12-5 Range Error 95% Index and 3.29 Sigma Bounding 177

Table 12-6 Ionospheric Error 95% Index and 3.29 Sigma Bounding..... 178

Table 12-7 Ionospheric Error 95% Index and 3.29 Sigma Bounding..... 179

APPENDIX

Appendix A: Glossary181
Appendix B: Additional Coverage Plots184

1.0 INTRODUCTION

The FAA monitors WAAS and GPS SPS performance in order to ensure the safe and effective use of the satellite navigation system in the National Airspace System (NAS). The Wide Area Augmentation System (WAAS) adds more timely integrity monitoring of GPS and improves position accuracy and availability of GPS within the WAAS coverage area.

Objectives of this report are:

- a. To evaluate and monitor the ability of WAAS to augment GPS by characterizing important performance parameters.
- b. To analyze the effects of GPS satellite operation and maintenance, and ionospheric activity on the WAAS performance.
- c. To investigate any GPS and WAAS anomalies and determine their impact on potential users.
- d. To archive performance of GPS and WAAS for future evaluations.

The WAAS data transmitted from Geostationary satellites (GEO) PRN#135 (CRW), PRN#138 (CRE) and PRN#133 (AMR) are used in the evaluation. CRE and CRW GEOs provide a precision approach (PA) ranging capability that supports all levels of WAAS service. AMR GEO provides only non-precision approach (NPA) ranging service.

The terms "PA" and "NPA" are used in this report to refer to the two modes of user equipment operation. PA and NPA are terms used in the original WAAS specification, FAA-E-2892. See Table 1-1 for a mapping of these terms to the user service levels.

Receivers in PA mode are required to: use all WAAS corrections, use only corrected satellites, not mix corrections from multiple GEOs, only use the designated Space Based Augmentation System (SBAS) for the published approach procedure, and not use ranging from a GPS or GEO satellite having a User Differential Range Error (UDRE) status of greater than 15 meters. Receiver in NPA mode may: mix corrected and uncorrected satellites, mix corrections from different GEOs or SBASs, use either the WAAS ionosphere corrections or the GPS Klobachar model for ionosphere corrections, and use ranging from a GPS or GEO satellite that have a UDRE status of greater than 15 meters. NPA mode receivers may also operate using Fault Detection / Fault Detection Exclusion (FD/FDE) in the absence of a SBAS. The data presented in this report does not take credit for the additional NPA mode availability and continuity provided by the use of FD/FDE, whether full FD/FDE or partial FD/FDE used to allow the mixing of corrected and uncorrected satellites. The NPA accuracy data presented in this report uses Klobachar ionosphere corrections in order to be conservative.

The results in this report are based on the application of the WAAS corrections to receiver data from the WAAS receiver network and receivers of the FAA's National Satellite Test Bed (NSTB) network and from analysis based on the correction data broadcast by WAAS. Table 1-2 lists the receivers used in the PA analyses. Table 1-3 lists the receivers used in the NPA analyses.

Table 1-1 WAAS Service Levels

User Service	NPA or PA	WAAS Protection Levels
RNP 0.3	NPA	HPL <= 0.3 nmi
RNP 0.1	NPA	HPL <= 0.1 nmi
LNAV	NPA	HPL <= 556 m
LNAV/VNAV	PA	HPL <= 556 m VPL <= 50 m
LP	PA	HPL <= 40 m
LPV	PA	HPL <= 40 m VPL <= 50 m
LPV200	PA	HPL <= 40 m VPL <= 35 m

Table 1-2 PA Evaluation Sites

	Number of Days Evaluated	Number of Samples
NSTB:		
Atlantic City	90	7746847
Grand Forks	90	7762498
Oklahoma City	83	7173719
WAAS:		
Albuquerque	91	7861621
Anchorage	91	7862009
Atlanta	91	7862106
Barrow	91	7859671
Bethel	91	7860412
Billings	91	7849194
Boston	91	7862235
Chicago	91	7862053
Cleveland	91	7854665
Cold Bay	91	7860534
Dallas	91	7857732
Denver	91	7860866
Fairbanks	91	7855421
Gander	91	7858563
Goose Bay	91	7862228
Houston	91	7838379
Iqaluit	91	7847295
Jacksonville	91	7862234
Juneau	91	7861839
Kansas City	91	7862192
Kotzebue	91	7861928
Los Angeles	91	7862085
Memphis	91	7861972
Merida	91	7857338
Mexico City	91	7848583
Miami	91	7861402
Minneapolis	91	7861324
New York	91	7862138
Oakland	91	7862109
Puerto Vallarta	91	7857554
Salt Lake City	91	7862160
San Jose Del Cabo	91	7857910
Seattle	91	7860459
Washington DC	91	7861624
Winnipeg	91	7862220

Table 1-3 NPA Evaluation Sites

Location	Number of Days Evaluated	Number of Samples
Albuquerque	91	7862200
Anchorage	91	7857353
Atlanta	91	7862201
Barrow	91	7860140
Bethel	91	7860258
Billings	91	7848814
Boston	91	7860791
Cleveland	91	7862201
Cold Bay	91	7860542
Fairbanks	91	7854503
Gander	91	7858419
Honolulu	91	7862166
Houston	91	7859437
Iqaluit	91	7847909
Juneau	91	7862106
Kansas City	91	7862160
Kotzebue	91	7862067
Los Angeles	91	7862201
Merida	91	7855125
Miami	91	7862162
Minneapolis	91	7862202
Oakland	91	7862112
Salt Lake City	91	7860742
San Jose Del Cabo	91	7861869
San Juan	91	7862187
Seattle	91	7859506
Tapachula	91	7855277
Washington DC	91	7862030

The report is divided in the performance categories listed below.

1. WAAS Position Accuracy
2. WAAS Operational Service Availability
3. WAAS Coverage
4. WAAS Integrity
5. WAAS Range Domain Accuracy
6. WAAS GEO Ranging Performance
7. WAAS Airport Availability
8. WAAS CNMP Analysis
9. WAAS Antenna Survey Validation
10. WAAS SQM Analysis
11. WAAS G3 Receiver Analysis

Table 1-4 lists the performance parameters evaluated for the WAAS in this report. Please note that these are the performance parameters associated with the WAAS system. These requirements are extracted from the FAA Specification FAA-E-2892C and FAA Specification FAA-E-2976, as applicable.

Table 1-4 WAAS Performance Parameters

Performance Parameter	Expected WAAS Performance
LPV Accuracy Horizontal	≤ 1.5m error 95% of the time
LPV Accuracy Vertical	≤ 2m error 95% of the time
LNAV Accuracy Horizontal	≤ 36m error 95% of the time
Availability LPV CONUS	99% availability of 100% of CONUS
Availability LPV Alaska	95% availability of 75% of Alaska
Availability LNAV CONUS	99.99% availability with HPL < 556m
Availability LNAV Alaska	99.9% availability with HPL < 556m
Availability En route OCONUS	99.9% availability with HPL < 2nmi
Probability of Hazardously Misleading Information (HMI)	< 10e-7 per approach

1.1 Event Summary

Table 1-5 lists events that affected WAAS performance or the ability to determine the WAAS performance during the reporting period. These events include GPS or WAAS anomalies, relevant receiver malfunctions, and receiver maintenance conducted. Detailed analyses of particular events are documented in the Discrepancy Reports (DR). The DRs are posted on the website <http://www.nstb.tc.faa.gov> under 'WAAS Technical Reports' and can also be accessed via hyperlink from Table 1-5 below. Please note "TOW" is the time of GPS week, which is the cumulative number of seconds since 00:00:00 Sunday (GMT without leap seconds).

Table 1-6 lists events related to WAAS upgrades that happened this quarter. Table 1-7 lists events related to GUS switchovers. A GUS switchover is the transition from one uplink site to the other uplink site for a GEO.

Table 1-5 Events

Start Date	End Date	Location/ Satellite	Service Affected	Event Description
3/31/2014	4/2/2014	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV), PRN19	None	On March 31 the UDRE for PRN-19 bumped to "Not Monitored" at about 15:10Z. The bump was caused by a false residual over threshold trip in the internal UDDRE monitor that was caused by multipath at the Tapachula (MTP) WRS. This issue repeated on PRN-19 until April 2.
4/3/2014	4/3/2014	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Alaska, LPV200_Alaska, LPV200_Canada	Elevated GIVEs caused outages of the LPV and LPV200 service in northern Alaska, and LPV200 service in Canada. The outages occurred at approximated 10:30 GMT. Please see plot(s): LPV_4/3/2014 LPV200_4/3/2014
4/3/2014	4/3/2014	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_CONUS	There was a short (less than 30 seconds) loss of LPV200 service in southern Oklahoma and northern Texas. In this

Start Date	End Date	Location/ Satellite	Service Affected	Event Description
				region the VPL is usually very close to the Vertical Alert Limit (VAL) of 35 meters. The GIVE value for several IGP's (at 35 degrees latitude; -105 degrees longitude, 30; -100, and 30;-125) elevated to 4.5m from 3.6m. This increase in GIVEs at those IGP's caused the VPL to become greater than 35 meters. The larger GIVEs at those IGP's are due to a 'hole' in the GPS constellation. Please see plot(s): LPV200_4/3/2014
4/5/2014	4/6/2014	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Geomagnetic activity caused elevated GIVEs for IGP's in northern Canada which resulted in a reduction in LPV and LPV 200 service. The KP value on April 5 was 4 and the KP value on April 6 was 3. Please see plot(s): LPV_4/5/2014 LPV200_4/5/2014
4/6/2014	4/6/2014	PRN21	LPV200_CONUS, LPV200_Alaska, LPV200_Canada	PRN-21 experienced a carrier phase glitch that triggered the WAAS carrier smoothing algorithm cycle slip detectors causing the carrier smoothing for PRN-21 to be re-initialized. This caused a temporary loss of LPV-200 service due to the brief loss of PRN-21. The loss of service occurred at approximately 10:42 GMT. Please see plot(s): LPV200_4/6/2014
4/10/2014	4/10/2014	PRN20	LPV200_CONUS, LPV200_Alaska	Planned maintenance on PRN-20 (NANU 2014036, Delta V maneuver) caused the temporary loss of LPV-200 service from the loss of that satellite. Service outages occurred in central CONUS and northern Canada. Please see plot(s): LPV200_4/10/2014
4/11/2014	4/12/2014	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_All, LPV200_All	Geomagnetic activity caused elevated GIVE values and a resulting reduction in LPV and LPV 200 service. See DR #123 Effect on WAAS from Iono Activity April 11-12 2014 for details. Please see plot(s): LPV_4/11/2014 LPV200_4/11/2014
4/13/2014	4/13/2014	PRN9	LPV200_Alaska	A carrier phase anomaly on PRN-9 caused WAAS to alarm that satellite resulting in a loss of LPV 200 service in northern Alaska. The loss of service lasted approximately two minutes. Please see plot(s): LPV200_4/13/2014
4/15/2014	4/15/2014	PRN31	LPV_CONUS, LPV_Canada, LPV200_CONUS, LPV200_Canada	Planned maintenance on PRN-31 (NANU 2014037) caused a loss of LPV service in eastern CONUS and Canada, and a loss of LPV-200 service in eastern and central CONUS and eastern Canada. During the time of these service outages the vertical

Start Date	End Date	Location/ Satellite	Service Affected	Event Description
				position error (VPE) at the Cleveland and Washington DC reference stations rose to 4.3 meters and 5.5 meters, respectively. This increase in VPE was observed at the three WREs of these reference stations. The service loss lasted for approximately 38 minutes. Please see plot(s): LPV_4/15/2014
4/18/2014	4/18/2014	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_CONUS, LPV200_CONUS	Elevated IGP GIVEs caused an LPV and LPV-200 service outage in eastern CONUS. The maximum KP on this day was 3. Please see plot(s): LPV_4/18/2014 LPV200_4/18/2014
4/19/2014	4/19/2014	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Alaska, LPV_Canada, LPV200_CONUS, LPV200_Alaska, LPV200_Canada	Elevated IGP GIVEs caused an LPV and LPV-200 service outage in northern Alaska, northern Canada, and western CONUS. There was also LPV service outage in northern Alaska and northern Canada. The maximum KP on this day was 4. Please see plot(s): LPV_4/19/2014 LPV200_4/19/2014
4/21/2014	4/21/2014	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Elevated IGP GIVEs caused an LPV and LPV-200 service outage in northern Canada at the beginning of the day. The maximum KP on this day was 4. Please see plot(s): LPV_4/21/2014 LPV200_4/21/2014
4/24/2014	4/24/2014	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_CONUS	Elevated IGP GIVEs caused a brief (less than 90 seconds) LPV-200 service outage in central CONUS. Please see plot(s): LPV200_4/24/2014
4/26/2014	4/26/2014	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska	Elevated IGP GIVEs caused an LPV-200 service outage in northern Alaska. The maximum KP on this day was 3. Please see plot(s): LPV200_4/26/2014
4/29/2014	4/29/2014	Barrow (BRW1), Barrow (BRW2), Barrow (BRW3), Bethel (BET1), Bethel (BET2), Bethel (BET3), Fairbanks (FAI1), Fairbanks (FAI2), Fairbanks (FAI3), Kotzebue (OTZ1), Kotzebue (OTZ2), Kotzebue (OTZ3)	LPV200_Alaska	Short overlapping communications outages to several Alaska reference stations resulted in the temporary loss of data from those reference stations. The result was higher IGP GIVE values in that region and a corresponding reduction in LPV-200 service for northern Alaska. Please see plot(s): LPV200_4/29/2014
4/30/2014	4/30/2014	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Alaska, LPV200_Canada	Elevated IGP GIVE values caused an LPV service outage in northern Canada, and an LPV-200 service outage in northern Alaska and northern Canada. The maximum KP on this day was 4.

Start Date	End Date	Location/ Satellite	Service Affected	Event Description
				Please see plot(s): LPV_4/30/2014 LPV200_4/30/2014
5/4/2014	5/4/2014	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Alaska, LPV200_Alaska, LPV200_Canada	Elevated IGP GIVEs caused an LPV service outage in Alaska, and an LPV-200 service outage in Alaska and Canada. The maximum KP on this day was 4. Please see plot(s): LPV_5/4/2014 LPV200_5/4/2014
5/8/2014	5/8/2014	Los Angeles (ZLA1), Los Angeles (ZLA2), Los Angeles (ZLA3)	Local	Local RFI at the ZLA (located in Palmdale, CA) reference station caused loss of LPV-200 service around 02:54 GMT for approximately 3 minutes.
5/8/2014	5/8/2014	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska	Elevated IGP GIVEs caused an LPV-200 service outage in Alaska in the beginning of the day. The maximum KP on this day was 4. This event is separate from the event that caused more widespread outages on this day. Please see plot(s): LPV200_5/8/2014
5/8/2014	5/8/2014	GEO138, Brewster (BRE-B)	LPV200_CONUS, LPV200_Canada	There was a manual switchover on the CRE GEO from Brewster to Woodbine. This caused the UDRE to be elevated on this day. Also, PRN-23 had a planned NANU (NANU 2014041) on this day. The two events combined caused a loss of LPV service in Alaska and Canada, and LPV-200 service CONUS, Alaska, and Canada Please see plot(s): LPV_5/8/2014 LPV200_5/8/2014
5/15/2014	5/15/2014	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Canada	Elevated IGP GIVEs caused a short LPV-200 service outage in Canada. The maximum KP on this day was 2. Please see plot(s): LPV200_5/15/2014
5/19/2014	5/19/2014	PRN9	None	NANU 2014046. PRN-9 decommissioned. Initially, NANU 2014042 indicated PRN-9 would be unusable until further notice no earlier than 5/16/2014. This NANU announced the decommissioning of this satellite.
5/23/2014	5/23/2014	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska, LPV200_Canada	Elevated IGP GIVE s caused an LPV service outage in Canada and an LPV-200 service outage in Alaska and Canada. The maximum KP on this day was 5. Please see plot(s): LPV_5/23/2014 LPV200_5/23/2014
5/24/2014	5/24/2014	Washington DC (ZDC1), Washington DC (ZDC2), Washington DC (ZDC3)	Local	Local RFI at the ZDC (located in Leesburg, VA) reference station caused loss of LPV and LPV-200 service outage around 22:00 GMT and an LPV-200 service outage around 18:30. The LPV outage was less than 30 seconds and the LPV-200 outages were each less than two minutes.

Start Date	End Date	Location/ Satellite	Service Affected	Event Description
5/28/2014	5/28/2014	PRN21	LPV200_CONUS, LPV200_Alaska	PRN-21 experienced a carrier phase glitch that triggered the WAAS carrier smoothing algorithm cycle slip detectors causing the carrier smoothing for PRN-21 to be re-initialized. This caused a temporary loss of LPV-200 service in CONUS and Alaska due to the brief loss of PRN-21. Please see plot(s): LPV200_5/28/2014
5/29/2014	5/29/2014	GEO138, Woodbine (QWE)	LPV_Canada, LPV200_Canada	A manual GUS switchover from Woodbine to Brewster for PRN-138 caused a loss of service in Canada. The GUS switchover resulted in higher UDREs for PRN-138. Please see plot(s): LPV_5/29/2014 LPV200_5/29/2014
5/30/2014	5/30/2014	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_Alaska	Elevated IGP GIVEs caused an LPV-200 service outage in northern Alaska. The maximum KP on this day was 4. Please see plot(s): LPV200_5/30/2014
5/30/2014	5/30/2014	PRN30	None	PRN-30 became operational. This is a GPS-IIF satellite (SVN-64) that was launched on February 21, 2014.
6/3/2014	6/3/2014	GEO135, Littleton (APA)	LPV_Alaska, LPV200_CONUS, LPV200_Alaska, RNP1_All, RNP3_All	Three manual GUS switchovers between the Littleton and Napa GUSs for PRN-135 caused a loss of LPV service in Alaska, and a loss of LPV-200 service in CONUS and Alaska. A SIS outage on GEO PRN-135 caused a loss of RNP service. The GUS switchovers resulted in higher UDREs for PRN-135. Note that when there is a GUS switchover for PRN-135 there is no WAAS broadcast available for northwestern Alaska since PRN-135 is the only GEO satellite in view to that region. The elevated UDRE for PRN-135 continued on June 4, 2014. This elevated UDRE caused service outages on June 4. Please see plot(s): LPV_6/3/2014 LPV200_6/3/2014 RNP1_6/3/2014 RNP3_6/3/2014
6/3/2014	6/3/2014	Oakland (ZOA1), Oakland (ZOA2), Oakland (ZOA3)	Local	Local RFI at the ZOA (located in Fremont, CA) reference station caused loss of LPV and LPV-200 service around 22:40 GMT. The service loss lasted about one minute. During this event the three WREs lost track of all satellites.
6/4/2014	6/4/2014	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Canada, LPV200_Canada	Elevated IGP GIVEs caused LPV and LPV-200 service outages in Canada. The maximum KP on this day was 2. Please see plot(s): LPV_6/4/2014 LPV200_6/4/2014
6/4/2014	6/4/2014	Washington D.C. (CnV), Los Angeles (CnV),	LPV200_CONUS	LPV200 CONUS service outages in Oklahoma/Texas occur daily. Based on

Start Date	End Date	Location/ Satellite	Service Affected	Event Description
		Atlanta (CnV)		airport analysis in this area the number of satellites used in the VPL calculation drops from 10 to 9 satellites, and then for about a minute it drops to 8 satellites. The VPL is normally between 34 meters to 35 meters when it has 8 satellites. On this day the VPL went up to 36.6 meters. As noted in similar events in this area, some of the surrounding IGP had higher IGP GIVE values. The actual loss of service is for a short amount of time, about one to two minutes. Please see plot(s): LPV200_6/4/2014
6/8/2014	6/8/2014	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV_Alaska, LPV200_Alaska, LPV200_Canada	Elevated IGP GIVEs caused LPV service outages in Alaska, and LPV-200 service outages in Alaska and Canada. The service loss occurred around 5:30 GMT. The maximum KP on this day was 6. Please see plot(s): LPV_6/8/2014 LPV200_6/8/2014
6/10/2014	6/10/2014	PRN6	None	PRN-6 became operational, as announced in NANU 2014049. This is a GPS-IIF satellite (SVN-67) that was launched on May 17, 2014.
6/10/2014	6/11/2014	Iqaluit (YFB1), Iqaluit (YFB2), Iqaluit (YFB3)	LPV_Canada, LPV200_Canada	A terrestrial communication outage at the Iqaluit WRS resulted in elevated IGP GIVEs that caused LPV and LPV-200 service outages in Canada. The communication outages at Iqaluit occurred on June 10 and June 11, though the affect on coverage was greater on June 10 than June 11. The communication outages at Iqaluit were all short in length, with none greater than 6 seconds and most less than 3 seconds. Please see plot(s): LPV_6/10/2014 LPV200_6/10/2014
6/11/2014	6/11/2014	Washington D.C. (CnV), Los Angeles (CnV), Atlanta (CnV)	LPV200_CONUS	LPV200 CONUS service outages in Oklahoma/Texas occur daily. Based on airport analysis in this area the number of satellites used in the VPL calculation drops from 10 to 9 satellites, and then for about a minute it drops to 8 satellites. The VPL is normally between 34 meters to 35 meters when it has 8 satellites. On this day the VPL went up to 35.002 meters. As noted in similar events in this area, some of the surrounding IGP had higher IGP GIVE values. The actual loss of service is for a short amount of time, about one to two minutes. Please see plot(s): LPV200_6/11/2014
6/12/2014	6/12/2014	Washington D.C. (CnV), Los Angeles (CnV),	LPV200_CONUS, LPV200_Alaska,	PRN-21 experienced a carrier phase glitch that triggered the WAAS carrier smoothing

Start Date	End Date	Location/ Satellite	Service Affected	Event Description
		Atlanta (CnV), PRN21	LPV200_Canada	algorithm cycle slip detectors causing the carrier smoothing for PRN-21 to be re-initialized. This caused a temporary loss of LPV-200 service due to the brief loss of PRN-21. The loss of service occurred at approximately 6:11 GMT. Please see plot(s): LPV200_6/12/2014
6/12/2014	6/12/2014	Iqaluit (YFB1), Iqaluit (YFB2), Iqaluit (YFB3)	LPV_Canada, LPV200_Canada	A terrestrial communication outage at the Iqaluit WRS resulted in elevated IGP GIVEs that caused LPV and LPV-200 service outages in north and northeast Canada. The communication outages at Iqaluit were all short in length, with none greater than 3 seconds. Please see plot(s): LPV_6/12/2014 LPV200_6/12/2014
6/16/2014	6/16/2014	Iqaluit (YFB1), Iqaluit (YFB2), Iqaluit (YFB3)	LPV200_Canada	A terrestrial communication outage at the Iqaluit WRS resulted in elevated IGP GIVEs that caused LPV-200 service outages in Canada. Please see plot(s): LPV200_6/16/2014
6/18/2014	6/19/2014	GEO135, Littleton (APA)	LPV_Alaska, LPV200_CONUS, LPV200_Alaska	GEO 135, manual switchover from Littleton to Napa. On June 19th, 2014 LPV/LPV200 Alaska coverage was still affected due to elevated UDREs, along with an LPV200 CONUS outage. TOW 295416-295421 Please see plot(s): LPV_6/18/2014 LPV200_6/18/2014 LPV_6/19/2014 LPV200_6/19/2014
6/18/2014	6/18/2014	GEO135, NAPA (APC)	LPV200_Alaska	Two GUS switchovers between the Littleton and Napa GUSs for PRN-135 caused a loss of LPV service in Alaska and a loss of LPV-200 service in CONUS and Alaska. The first GUS switchover was manual and the second was due to a fault at the Napa GUS. The GUS switchovers resulted in higher UDREs for PRN-135. Note that when there is a GUS switchover for PRN-135 there is no WAAS broadcast available for northwestern Alaska since PRN-135 is the only GEO satellite in view to that region. The elevated UDRE for PRN-135 continued on June 4, 2014. This elevated UDRE caused service outages on June 4. See DR #124 Loss of LPV-200 Service in Central CONUS June 18 2014 . Please see plot(s): LPV200_6/18/2014
6/20/2014	6/21/2014	Iqaluit (YFB1), Iqaluit (YFB2), Iqaluit (YFB3)	LPV_Canada, LPV200_CONUS	A terrestrial communication outage at the Iqaluit WRS resulted in elevated IGP GIVEs that caused LPV-200 service outages on June 20 and LPV and LPV-200 service outages on June 21 in Canada. The service loss on June 21 affected more area than on

Start Date	End Date	Location/ Satellite	Service Affected	Event Description
				June 20. Please see plot(s): LPV_6/20/2014 LPV200_6/20/2014
6/23/2014	6/23/2014	Iqaluit (YFB1), Iqaluit (YFB2), Iqaluit (YFB3)	LPV_Canada, LPV200_Canada	A terrestrial communication outage at the Iqaluit WRS resulted in elevated IGP GIVEs that caused LPV and LPV-200 service outages in Canada. Please see plot(s): LPV_6/23/2014 LPV200_6/23/2014

Table 1-6 WAAS Upgrades

There were no WAAS upgrades for this reporting period.

Table 1-7 GUS Switchovers

Start Date	End Date	GUS Switch	Location/ Satellite	Service Affected	Event Description
4/2/2014	4/2/2014	Faulted	GEO133, Paumalu (HDH)	None	GEO 133 switched to Paumalu, Santa Paula faulted. TOW 280604-280617
4/11/2014	4/11/2014	Manual	GEO133, Paumalu (HDH)	None	GEO 133, manual switchover from Paumalu to Santa Paula. TOW 433661-433666
4/17/2014	4/17/2014	Manual	GEO138, Woodbine (QWE)	None	GEO 138, manual switchover from Woodbine to Brewster-B. TOW 427393-427398
5/1/2014	5/1/2014	Manual	GEO133, Santa Paula (SZP)	None	GEO 133, manual switchover from Santa Paula to Paumalu. TOW 374451-374458
5/3/2014	5/3/2014	Manual	GEO133, Paumalu (HDH)	None	GEO 133, manual switchover from Paumalu to Santa Paula. TOW 543778-543783
5/8/2014	5/8/2014	Manual	GEO138, Brewster (BRE-B)	LPV200_CONUS, LPV200_Canada	There was a manual switchover on the CRE GEO from Brewster to Woodbine. This caused the UDRE to be elevated on this day. Also, PRN-23 had a planned NANU (NANU 2014041) on this day. The two events combined caused a loss of LPV service in Alaska and Canada, and LPV-200 service CONUS, Alaska, and Canada Please see plot(s): LPV_5/8/2014 LPV200_5/8/2014
5/29/2014	5/29/2014	Manual	GEO138, Woodbine (QWE)	LPV_Canada, LPV200_Canada	A manual GUS switchover from Woodbine to Brewster for PRN-138 caused a loss of service in Canada. The GUS switchover resulted in higher UDREs for PRN-138. Please see plot(s): LPV_5/29/2014 LPV200_5/29/2014
6/3/2014	6/3/2014	Manual	GEO135, NAPA (APC)	LPV_Alaska, LPV200_CONUS, LPV200_Alaska	GEO 135, manual switchover from Napa to Littleton. TOW 202372-207421 Please see plot(s): LPV_6/3/2014

Start Date	End Date	GUS Switch	Location/ Satellite	Service Affected	Event Description
					LPV200_6/3/2014
6/3/2014	6/4/2014	Manual	GEO135, NAPA (APC)	LPV_Alaska, LPV200_CONUS, LPV200_Alaska, RNP3_All, RNP1_All	<p>GEO 135, manual switchover from Napa to Littleton. TOW 221843-221849 there was a SIS Outage on Geo 135 along with a switchover later in the day. There was an LPV200 outage in the center of CONUS due to the fact that the UDRE was elevated on CRW. The LPV200 outage occurred from about 15:32 to 15:38 GMT on W1795D2. The VPL increased to about 35.5 meters during that time. The UDRE of CRW remained elevated the following day on CRW. There was an outage at the same time of day on W1795D3 due to elevated UDREs on CRW.</p> <p>Please see plot(s): LPV_6/3/2014 LPV200_6/3/2014 RNP1_6/3/2014 RNP3_6/3/2014 LPV_6/4/2014 LPV200_6/4/2014 RNP1_6/4/2014 RNP3_6/4/2014</p>
6/3/2014	6/3/2014	Manual	GEO135, Littleton (APA)	LPV_Alaska, LPV200_CONUS, LPV200_Alaska	<p>Three manual GUS switchovers between the Littleton and Napa GUSs for PRN-135 caused a loss of LPV service in Alaska and a loss of LPV-200 service in CONUS and Alaska. The GUS switchovers resulted in higher UDREs for PRN-135. Note that when there is a GUS switchover for PRN-135 there is no WAAS broadcast available for northwestern Alaska since PRN-135 is the only GEO satellite in view to that region. The elevated UDRE for PRN-135 continued on June 4, 2014. This elevated UDRE caused service outages on June 4.</p> <p>Please see plot(s): LPV_6/3/2014 LPV200_6/3/2014 RNP1_6/3/2014 RNP3_6/3/2014</p>
6/18/2014	6/18/2014	Faulted	GEO135, NAPA (APC)	LPV200_Alaska	<p>Two GUS switchovers between the Littleton and Napa GUSs for PRN-135 caused a loss of LPV service in Alaska and a loss of LPV-200 service in CONUS and Alaska. The first GUS switchover was manual and the second was due to a fault at the Napa GUS. The GUS switchovers resulted in higher UDREs for PRN-135. Note that when there is a GUS switchover for PRN-135 there is no WAAS broadcast available for northwestern Alaska since PRN-135 is the only GEO satellite in view to that region. The elevated UDRE for PRN-135 continued on June 4, 2014. This elevated UDRE caused service outages on June 4. See DR #124.</p> <p>Please see plot(s): LPV200_6/18/2014</p>
6/18/2014	6/19/2014	Manual	GEO135, Littleton	LPV_Alaska,	GEO 135, manual switchover from Littleton

Start Date	End Date	GUS Switch	Location/ Satellite	Service Affected	Event Description
			(APA)	LPV200_CONUS, LPV200_Alaska	to Napa. On June 19th,2014 LPV/LPV200 Alaska coverage was still affected due to elevated UDREis, along with an LPV200 CONUS outage. TOW 295416-295421 Please see plot(s): LPV 6/18/2014 LPV200 6/18/2014 LPV 6/19/2014 LPV200 6/19/2014

1.2 Report Overview

Section 2 documents the LPV and NPA performance observed for the indicated receiver locations (see Tables 1-2 and 1-3). The 95% accuracy index and the maximum inaccuracy for the reporting period are tabulated. The daily 95% accuracy index is plotted for each receiver. Histograms of the vertical and horizontal error distribution using the data from all the evaluated receivers are provided..

Section 3 summarizes the WAAS instantaneous availability performance, at each receiver, for three operational service levels during the reporting period. Daily availability is also plotted for each receiver evaluated. The number of outages and outage rate for each site is reported.

Section 4 provides geographic plots of the availability of the WAAS services rolled up for the quarter. Plots of the percent of the CONUS and Alaska service areas covered by various levels of service availability are provided.

Section 5 summarizes the number of HMI events detected during the reporting period and presents a safety margin index for each receiver. The safety margin index reflects the amount of over bounding of position error by WAAS protection levels. This section also includes update rates of WAAS messages transmitted from CRE, CRW, and AMR.

Section 6 provides the UDRE and GIVE bounding percentage and the 95% index of the range and ionospheric accuracy for each satellite tracked by the WAAS receiver at 12 locations.

Section 7 provides the GEO ranging performance for CRE and CRW.

Section 8 provides WAAS LPV availability and outages at selected airports.

Section 9 provides the assessment of WAAS CNMP bounding for the 114 WAAS receivers.

Section 10 provides the surveyed positions of all WREs and the difference between the WRE survey positions in the current operational software and the survey positions in this report.

Section 11 provides the daily and quarterly average of SQM PRN type biases and PRN biases.

Section 12 provides the WAAS G3 Novatel receiver performance.

2.0 WAAS POSITION ACCURACY

Navigation error data, collected from WAAS and NSTB reference stations, was processed to determine position accuracy at each location. This was accomplished by utilizing the GPS/WAAS position solution tool to compute a RTCA DO-229D weighted least squares user navigation solution, and WAAS horizontal and vertical protection levels (HPL & VPL), once every second. The user position calculated for each receiver was compared to the surveyed position of the antenna to assess position error associated with the WAAS SIS over time. The position errors were analyzed and statistics were generated for the operational service levels shown in Table 1-1.

Table 2-1 shows PA horizontal and vertical position accuracy maintained for 95% of the time at LP, LPV and LNAV/VNAV operational service levels for the quarter. The table also includes 95% SPS accuracy for certain locations. Figures 2-1 to 2-6 show the daily horizontal and vertical 95% accuracy for LPV operational service level for the period. Note that WAAS accuracy statistics presented are compiled only when all WAAS corrections (fast, long term, and ionospheric) for at least 4 satellites are available. This is referred to as PA navigation mode. The percentage of time that PA navigation mode was supported by WAAS at each receiver is also shown in Table 2-1. A user is considered to be in NPA navigation mode if only WAAS fast and long term corrections are available to a user (i.e. no ionospheric corrections). Table 2-2 shows NPA horizontal position accuracy for 95% and 99.999% of the time. This table also shows the maximum NPA horizontal position error for the quarter. Figures 2-7 to 2-8 show the daily horizontal 95% accuracy for NPA.

Table 2-3 shows the maximum LPV error statistics. The column marked 'Horizontal Error' shows the maximum position errors while the calculated HPL meets the LPV service level defined in Table 1-1. The column marked 'Vertical Error' shows the maximum position errors while the calculated VPL meets the LPV service level. The columns marked 'Horizontal Error/HPL' and 'Vertical Error/VPL' show the ratio of position error to protection level at the time the maximum error occurred. The columns marked 'Horizontal Maximum Ratio' and 'Vertical Maximum Ratio' show the maximum position error to protection level ratio for the quarter.

During this reporting period, the maximum 95% CONUS horizontal and vertical LPV errors are 1.454 meters and 1.752 meters, both at Atlantic City. The minimum 95% CONUS horizontal and vertical LPV errors are 0.621 meters and 0.902 meters at Denver and Salt Lake City, respectively. The maximum 95% and 99.999% NPA horizontal errors are 7.014 meters and 15.602 meters, both at Honolulu. The minimum 95% and 99.999% horizontal errors are 1.479 meters and 3.171 meters, both at Kansas City.

The increases in 95% PA position errors in Figure 2-1 to 2-6 on the following days were due to geomagnetic activity: On 4/12/2014 and 4/30/2014 position errors everywhere were elevated. On 4/19/2014 and 4/21/2014 position errors in Alaska and Canada were elevated. On 5/4/2014, 5/08/2014, and 6/6/2014 position errors in Alaska only were elevated. On 5/23/2014 position errors in Canada only were elevated. The increases in 95% NPA position errors on 04/05/2014, 04/06/2014, 04/12/2014, and 04/19/2014 in Figure 2.7 to 2.8 were due to geomagnetic activity as well.

Figures 2-9 to 2-12 show the distributions of the vertical and horizontal errors at all 38 WAAS receiver locations combined in triangle charts and 2-D histogram plots for the quarter. The triangle charts in Figures 2-9 and 2-10 show the distributions of vertical position errors (VPE) versus vertical protection levels (VPL) and horizontal position errors (HPE) versus horizontal protection levels (HPL). The horizontal axis is the position error and the vertical axis is the WAAS protection levels. Lower protection levels equate to better availability. The diagonal line shows the point where error equals protection level. Above and to the left of the diagonal line in the chart, errors are bounded (WAAS is providing integrity in the position domain); below and to the right, errors are not bounded (HMI could be present). The 2-D histogram plots in Figures 2-11 to 2-12 show the distributions of vertical and horizontal position errors and normalized position errors. The blue trace shows the distributions of the actual vertical and horizontal errors. The horizontal axis is the position errors and the vertical axis is the total count of data samples (log scale) in each 0.1-meter bin. The magenta trace show the distributions of the actual vertical and horizontal errors normalized by one-sigma value of the protection level; vertical - (VPL/5.33) and horizontal - (HPL/6.0). The horizontal axis is the standard units and vertical axis is the observed distribution of normalized errors data samples in each 0.1-sigma bin. Narrowness of the normalized error distributions shows very good observed safety performance.

Table 2-1 PA 95% Horizontal and Vertical Accuracy

Location	Horizontal (HAL=40m) (Meters)	Horizontal (HAL=556m) (Meters)	Vertical (VAL=50m) (Meters)	Percentage in PA mode (%)	SPS Accuracy	
					95% Horizontal (Meters)	95% Vertical (Meters)
Arcata	1.200	1.200	1.419	100	*	*
Atlantic City	1.526	1.530	1.637	100	*	*
Grand Forks	1.193	1.202	1.502	100	*	*
Oklahoma City	0.943	0.943	1.376	100	*	*
Albuquerque	0.701	0.701	0.984	100	2.318	5.619
Anchorage	0.743	0.748	1.385	100	*	*
Atlanta	0.825	0.825	1.361	100	2.566	5.635
Barrow	0.952	0.968	2.101	100	*	*
Bethel	0.649	0.650	1.146	100	2.479	7.078
Billings	0.924	0.927	1.101	100	2.265	5.299
Boston	0.907	0.912	1.112	100	2.695	5.044
Chicago	0.906	0.909	1.017	100	*	*
Cleveland	0.849	0.853	1.042	100	2.578	5.108
Cold Bay	0.730	0.731	1.193	100	*	*
Dallas	0.807	0.807	1.460	100	*	*
Denver	0.690	0.690	0.903	100	*	*
Fairbanks	0.710	0.720	1.377	100	2.671	6.486
Gander	1.039	1.048	1.322	100	*	*
Goose Bay	1.027	1.040	1.338	100	*	*
Houston	0.905	0.905	1.661	100	2.720	6.248
Iqaluit	1.469	1.524	2.424	100	*	*
Jacksonville	0.906	0.906	1.556	100	*	*
Juneau	0.818	0.826	1.332	100	*	*
Kansas City	0.754	0.754	1.010	100	2.450	5.334
Kotzebue	0.833	0.847	1.496	100	2.886	6.806
Los Angeles	0.636	0.636	1.073	100	2.210	6.413
Memphis	0.786	0.786	1.181	100	*	*
Merida	0.934	0.934	1.875	100	*	*
Mexico City	0.935	0.935	2.536	100	*	*
Miami	1.021	1.021	1.867	100	3.044	5.947
Minneapolis	0.818	0.823	0.941	100	2.398	5.051
New York	0.985	0.988	1.061	100	*	*
Oakland	0.664	0.664	1.105	100	2.151	6.542
Puerto Vallarta	0.986	0.986	2.284	100	*	*
Salt Lake City	0.710	0.710	0.934	100	2.184	5.552
San Jose Del Cabo	0.952	0.952	2.125	100	*	*
Seattle	0.901	0.905	1.026	100	2.172	5.518
Washington DC	0.906	0.909	1.198	100	2.658	5.379
Winnipeg	0.890	0.896	1.186	100	*	*

* = SPS Data not processed.

Table 2-2 NPA 95% and 99.999% Horizontal Accuracy

Location	95% Horizontal (meters)	99.999% Horizontal (meters)	Percentage in NPA mode (%)	Maximum Horizontal Error
Albuquerque	1.804	4.638	100	4.813
Anchorage	3.065	6.491	100	6.669
Atlanta	1.964	5.584	100	5.786
Barrow	3.125	6.315	99.935	6.454
Bethel	2.648	6.597	100	6.735
Billings	1.751	4.132	100	4.477
Boston	1.895	3.997	100	4.151
Cleveland	1.644	4.298	100	4.491
Cold Bay	1.782	4.584	100	4.852
Fairbanks	3.392	7.461	100	7.620
Gander	2.058	4.869	100	5.013
Honolulu	7.014	15.602	100	15.915
Houston	2.925	5.667	100	5.898
Iqaluit	2.234	5.735	100	5.853
Juneau	2.648	6.006	100	6.157
Kansas City	1.479	3.171	100	3.348
Kotzebue	3.074	6.823	99.935	7.009
Los Angeles	2.412	5.664	100	5.893
Merida	3.498	10.550	100	10.736
Miami	3.039	7.364	100	7.724
Minneapolis	1.761	3.856	100	4.060
Oakland	1.884	5.447	100	5.782
Salt Lake City	1.495	4.700	100	4.892
San Jose Del Cabo	3.642	9.137	100	9.302
San Juan	2.964	11.059	100	11.472
Seattle	1.515	5.020	100	5.336
Tapachula	3.800	11.579	100	11.875
Washington DC	1.895	4.662	100	4.868

Table 2-3 Maximum LPV Error Statistics

Location	Horizontal Error (m)	Horizontal Error/HPL	Horizontal Maximum Ratio	Vertical Error (m)	Vertical Error/VPL	Vertical Maximum Ratio
Atlantic City	2.880	0.198	0.240	5.470	0.112	0.211
Bangor	3.427	0.225	0.248	7.186	0.270	0.271
Grand Forks	2.948	0.135	0.200	3.679	0.179	0.224
Oklahoma City	2.230	0.237	0.249	3.626	0.121	0.214
Albuquerque	2.425	0.219	0.219	3.202	0.142	0.185
Anchorage	2.027	0.118	0.154	4.461	0.156	0.231
Atlanta	1.817	0.094	0.161	2.752	0.098	0.190
Barrow	2.877	0.108	0.153	6.611	0.183	0.188
Bethel	2.189	0.135	0.141	4.331	0.090	0.143
Billings	2.710	0.222	0.238	4.515	0.154	0.196
Boston	2.081	0.144	0.169	3.058	0.079	0.144
Chicago	2.958	0.251	0.254	3.296	0.187	0.218
Cleveland	2.070	0.213	0.213	4.392	0.105	0.180
Cold Bay	2.135	0.078	0.100	4.234	0.086	0.143
Dallas	1.859	0.192	0.207	3.712	0.143	0.218
Denver	2.094	0.127	0.166	3.645	0.155	0.169
Fairbanks	2.495	0.117	0.181	4.646	0.236	0.236
Gander	2.389	0.088	0.150	4.788	0.106	0.148
Goose Bay	4.493	0.219	0.219	7.227	0.167	0.167
Houston	2.104	0.089	0.210	3.597	0.154	0.223
Iqaluit	2.587	0.103	0.152	6.891	0.139	0.175
Jacksonville	2.329	0.193	0.193	3.141	0.161	0.218
Juneau	2.472	0.142	0.174	5.488	0.211	0.211
Kansas City	1.727	0.160	0.180	2.785	0.110	0.185
Kotzebue	2.104	0.109	0.162	5.125	0.133	0.165
Los Angeles	1.805	0.123	0.136	3.817	0.161	0.189
Memphis	2.030	0.106	0.185	2.476	0.105	0.178
Merida	4.026	0.154	0.172	5.222	0.113	0.207
Mexico City	3.242	0.094	0.118	5.228	0.206	0.216
Miami	2.640	0.192	0.192	3.711	0.184	0.234
Minneapolis	2.249	0.209	0.209	4.193	0.139	0.185
New York	2.122	0.202	0.202	3.402	0.070	0.177
Oakland	1.971	0.144	0.167	4.439	0.121	0.179
Puerto Vallarta	2.574	0.068	0.130	5.079	0.106	0.172
Salt Lake City	1.865	0.181	0.187	2.632	0.149	0.165
San Jose Del Cabo	2.275	0.144	0.159	6.567	0.165	0.183
Seattle	2.357	0.154	0.178	4.070	0.122	0.162
Washington DC	2.467	0.236	0.238	5.362	0.117	0.174
Winnipeg	2.974	0.093	0.211	4.416	0.244	0.244

Figure 2-1 LPV 95% Horizontal Accuracy

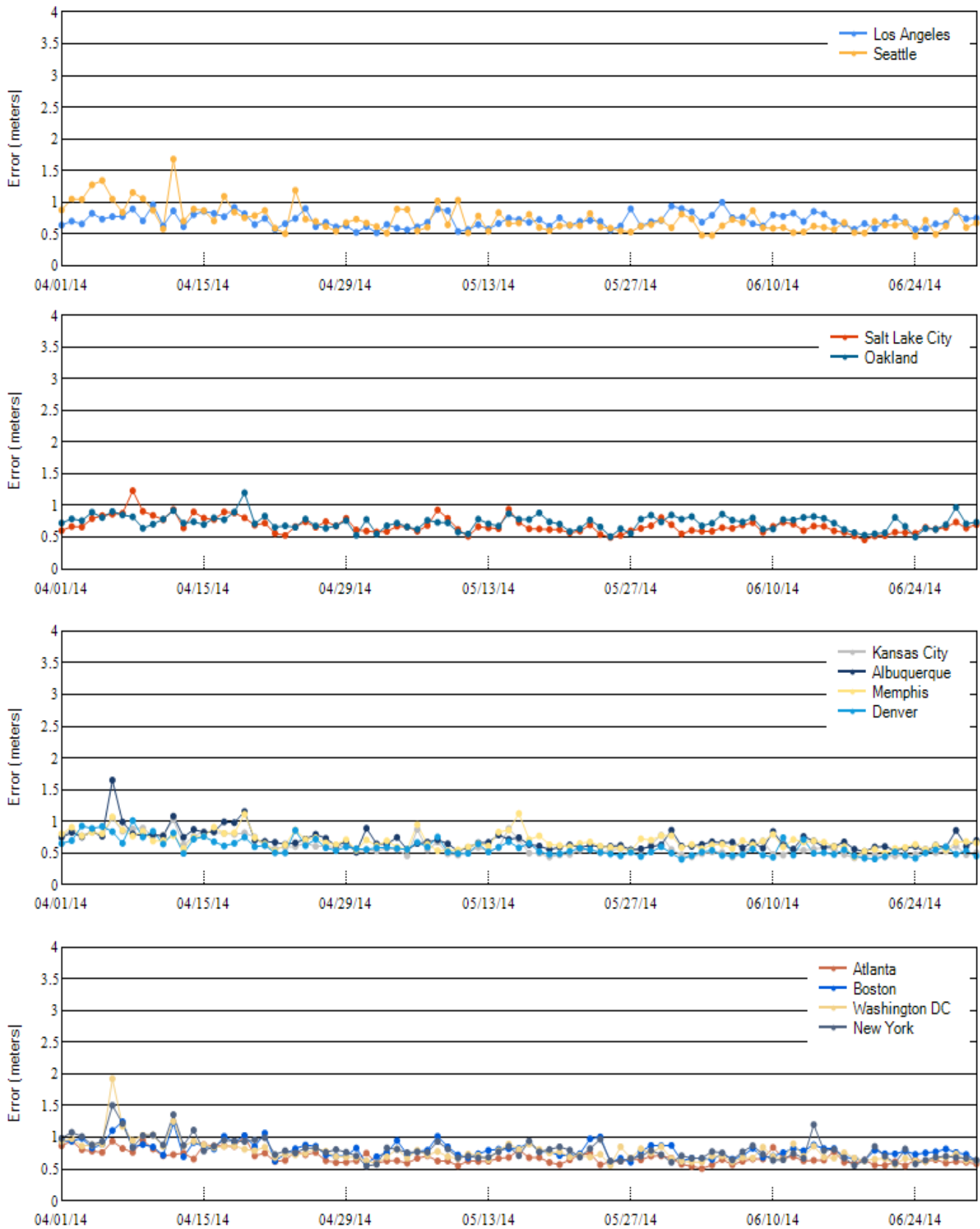


Figure 2-2 LPV 95% Horizontal Accuracy

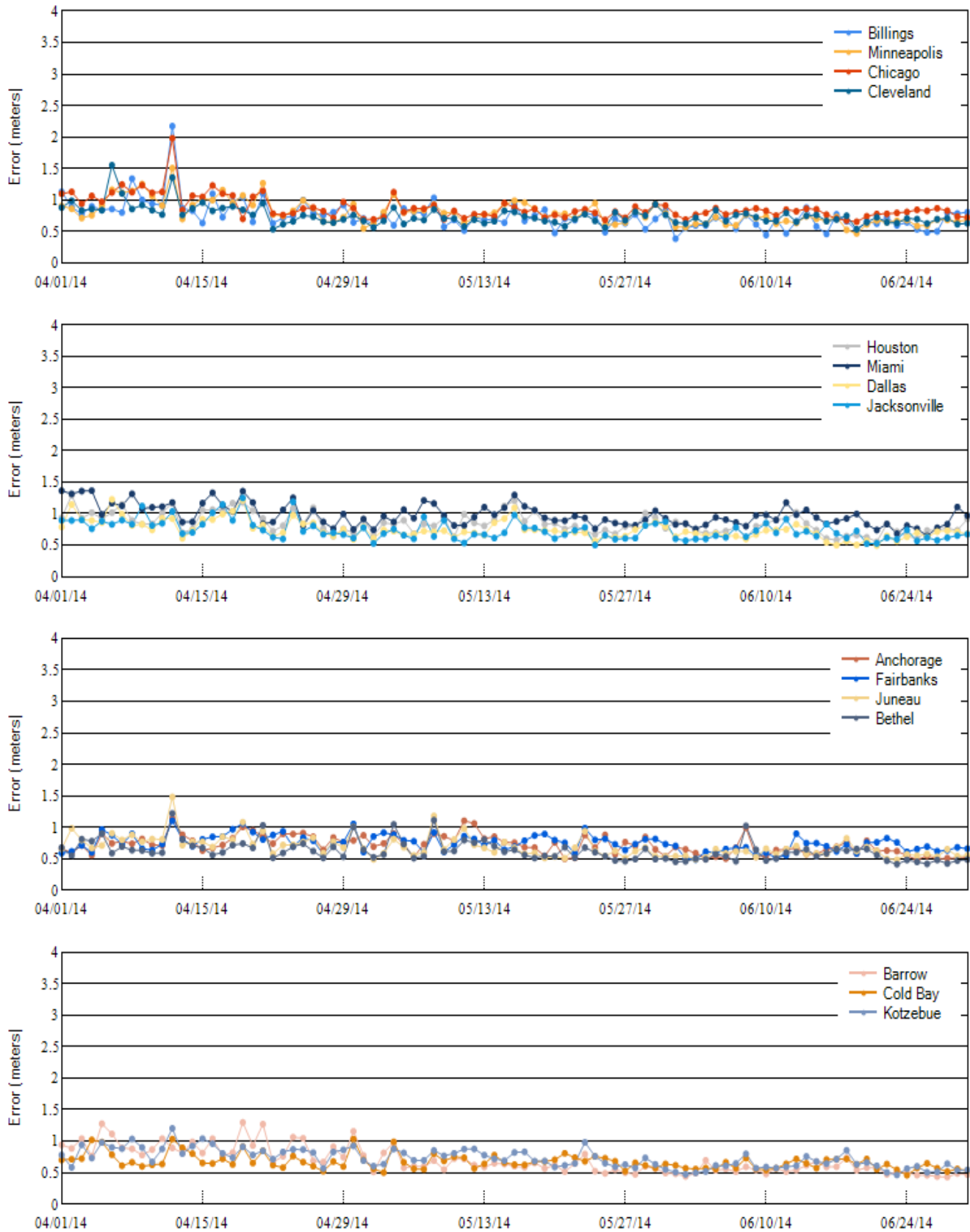


Figure 2-3 LPV 95% Horizontal Accuracy

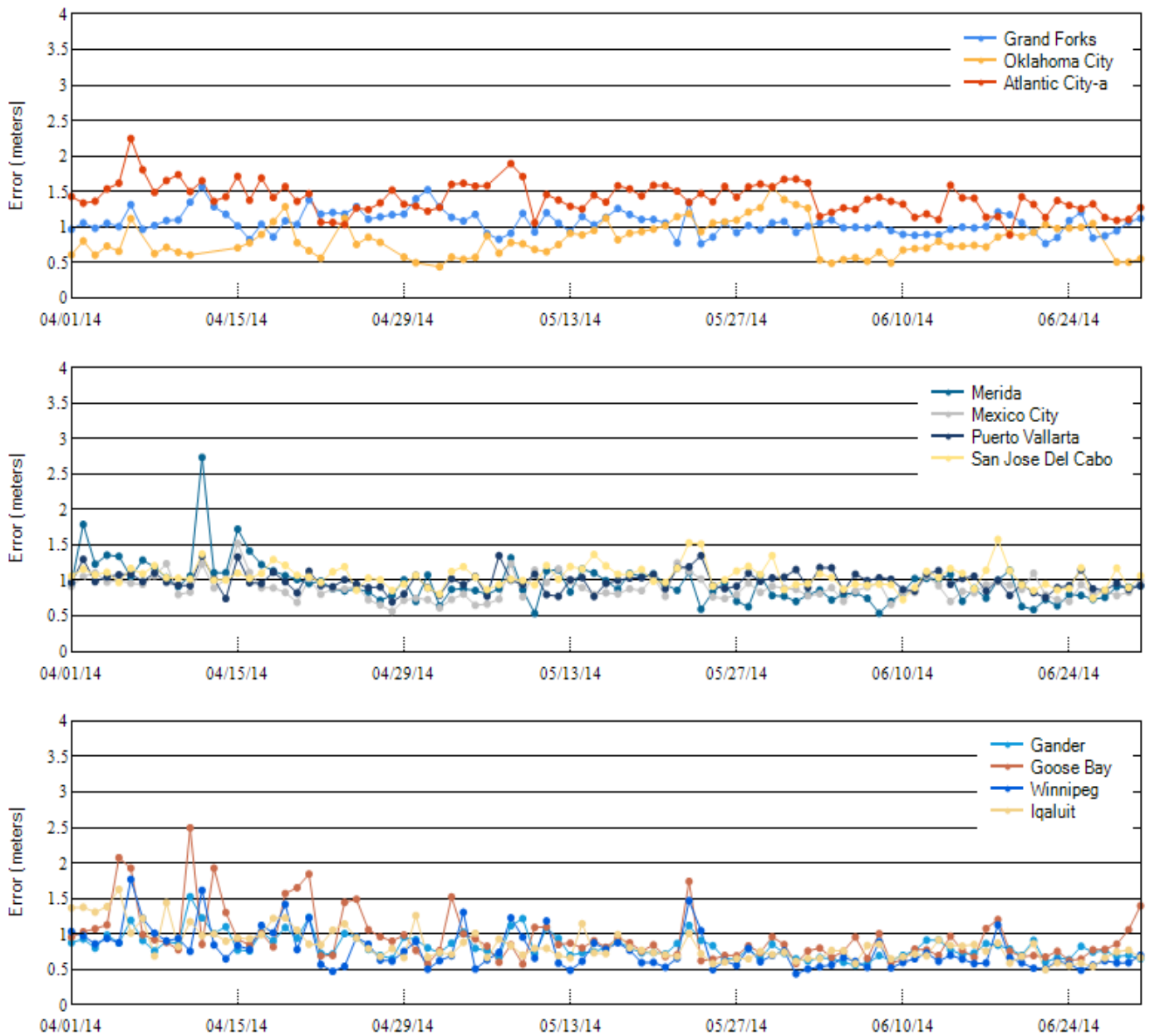


Figure 2-4 LPV 95% Vertical Accuracy

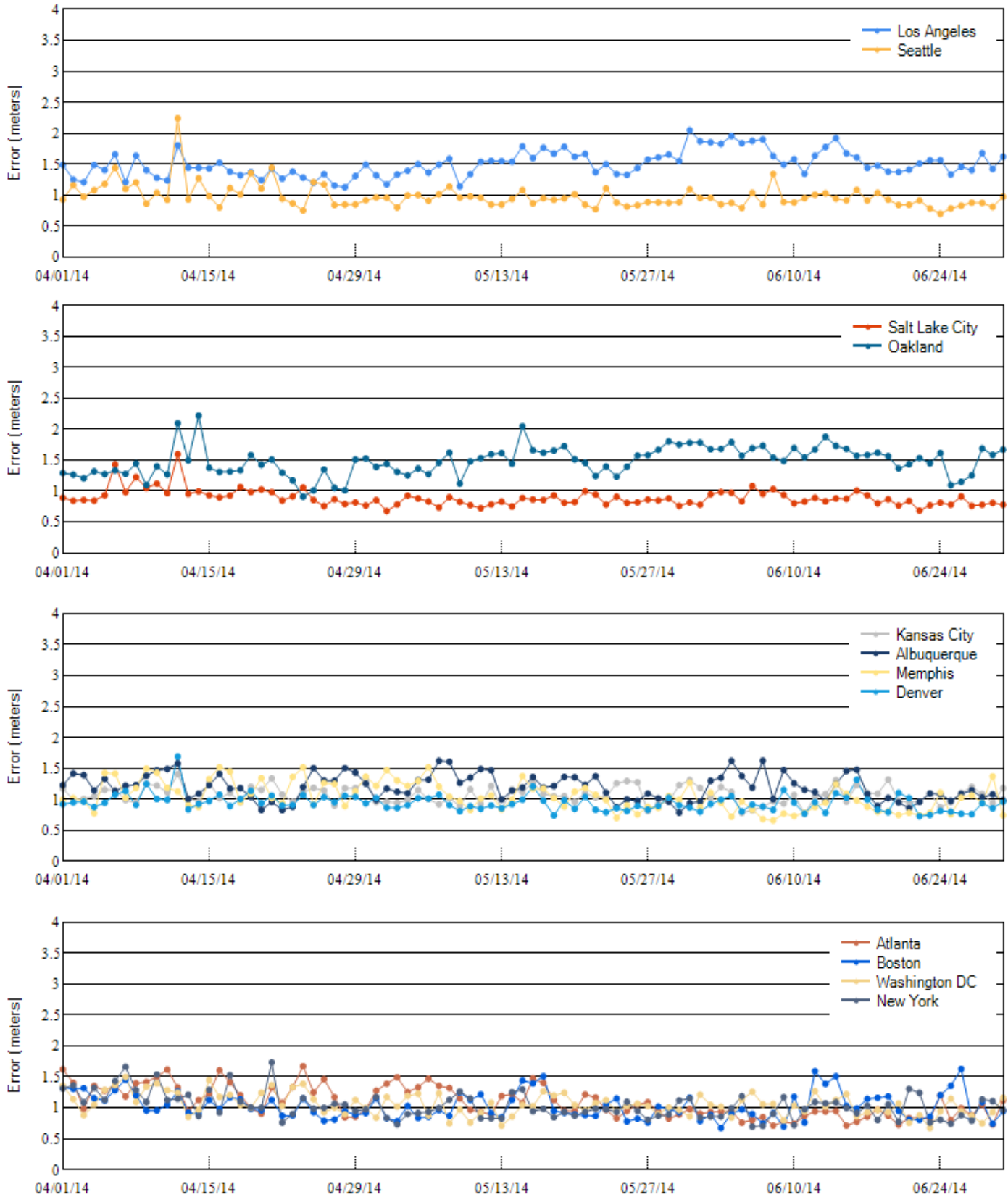


Figure 2-5 LPV 95% Vertical Accuracy

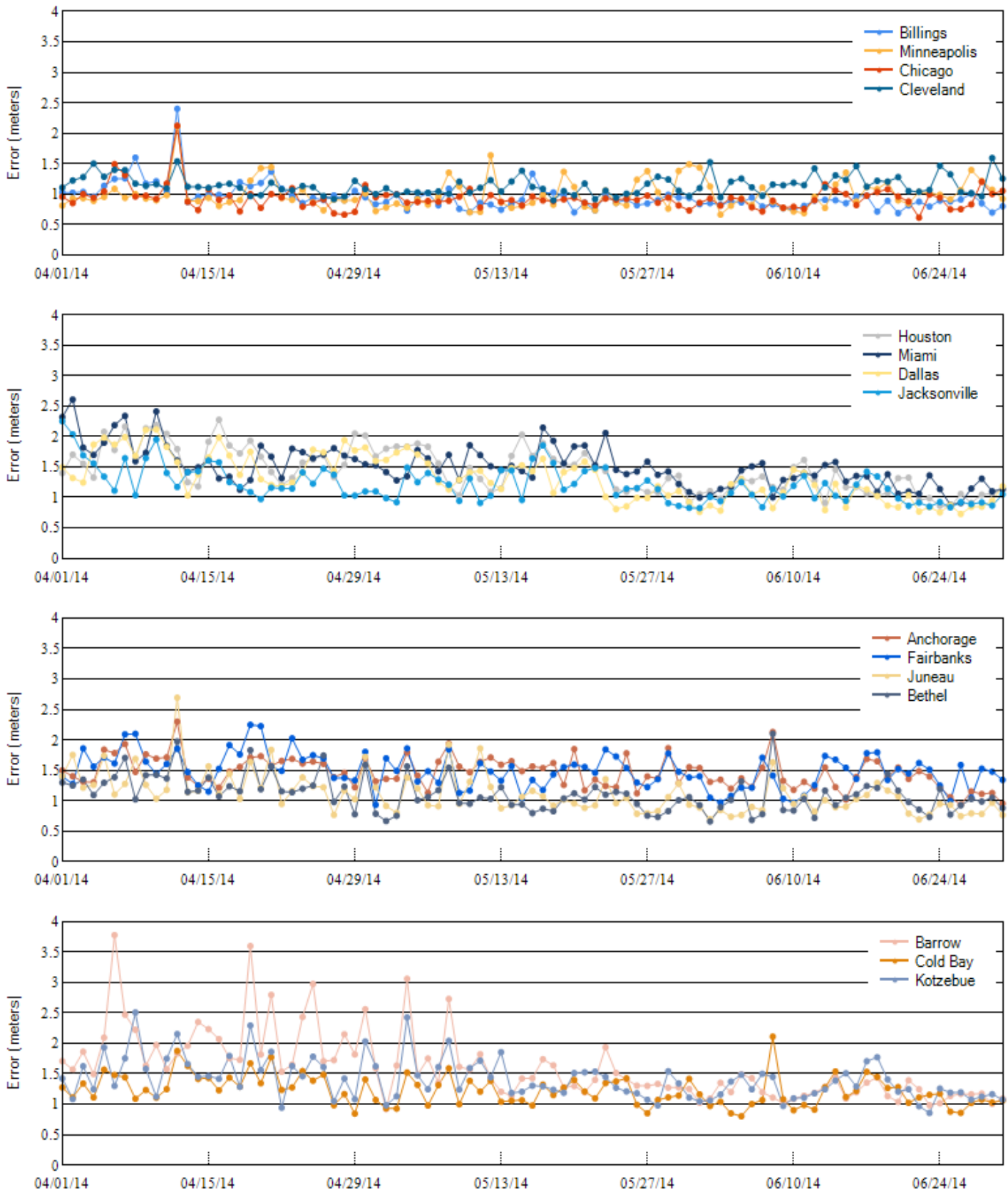


Figure 2-6 LPV 95% Vertical Accuracy

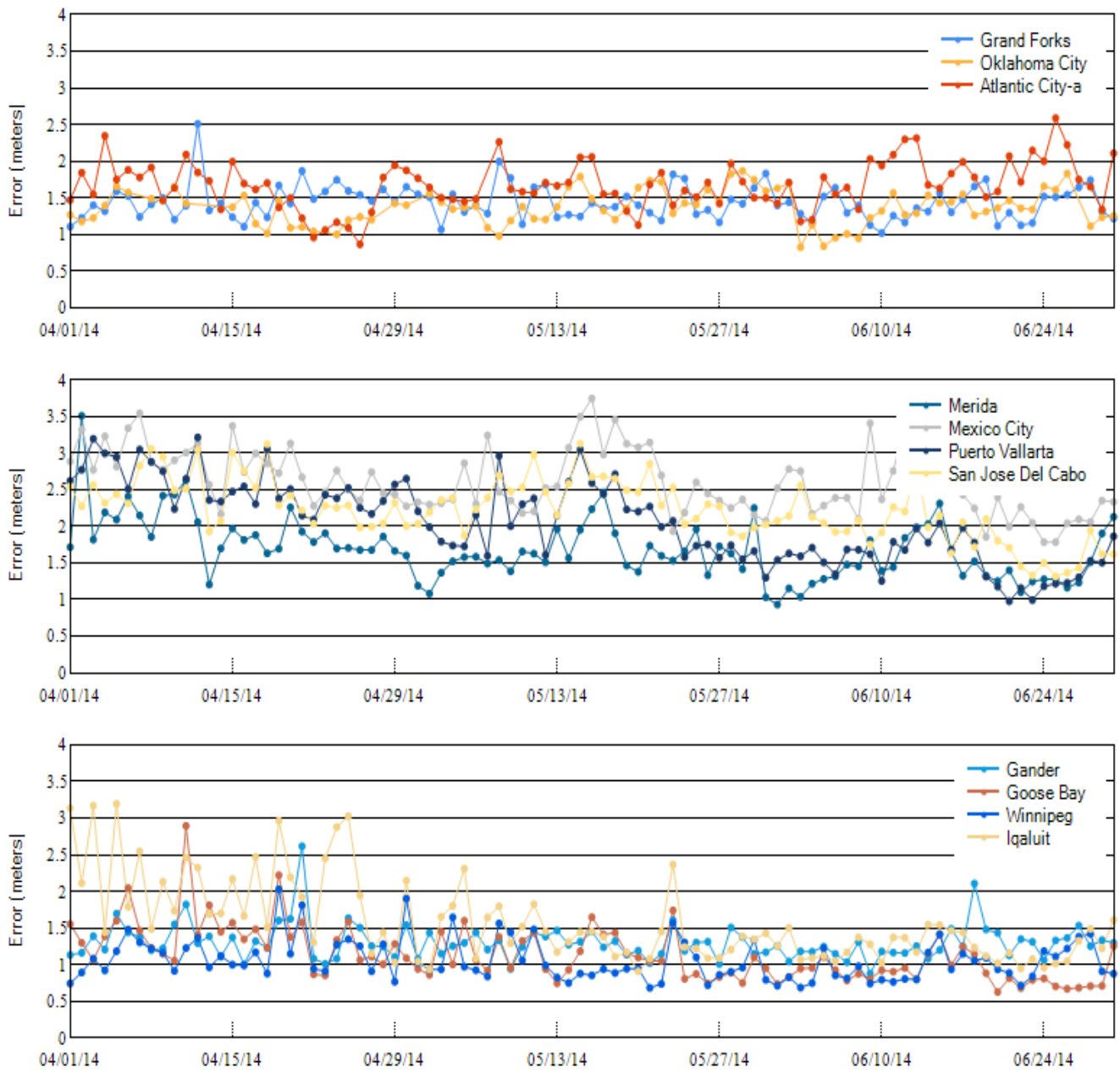


Figure 2-7 NPA 95% Horizontal Accuracy

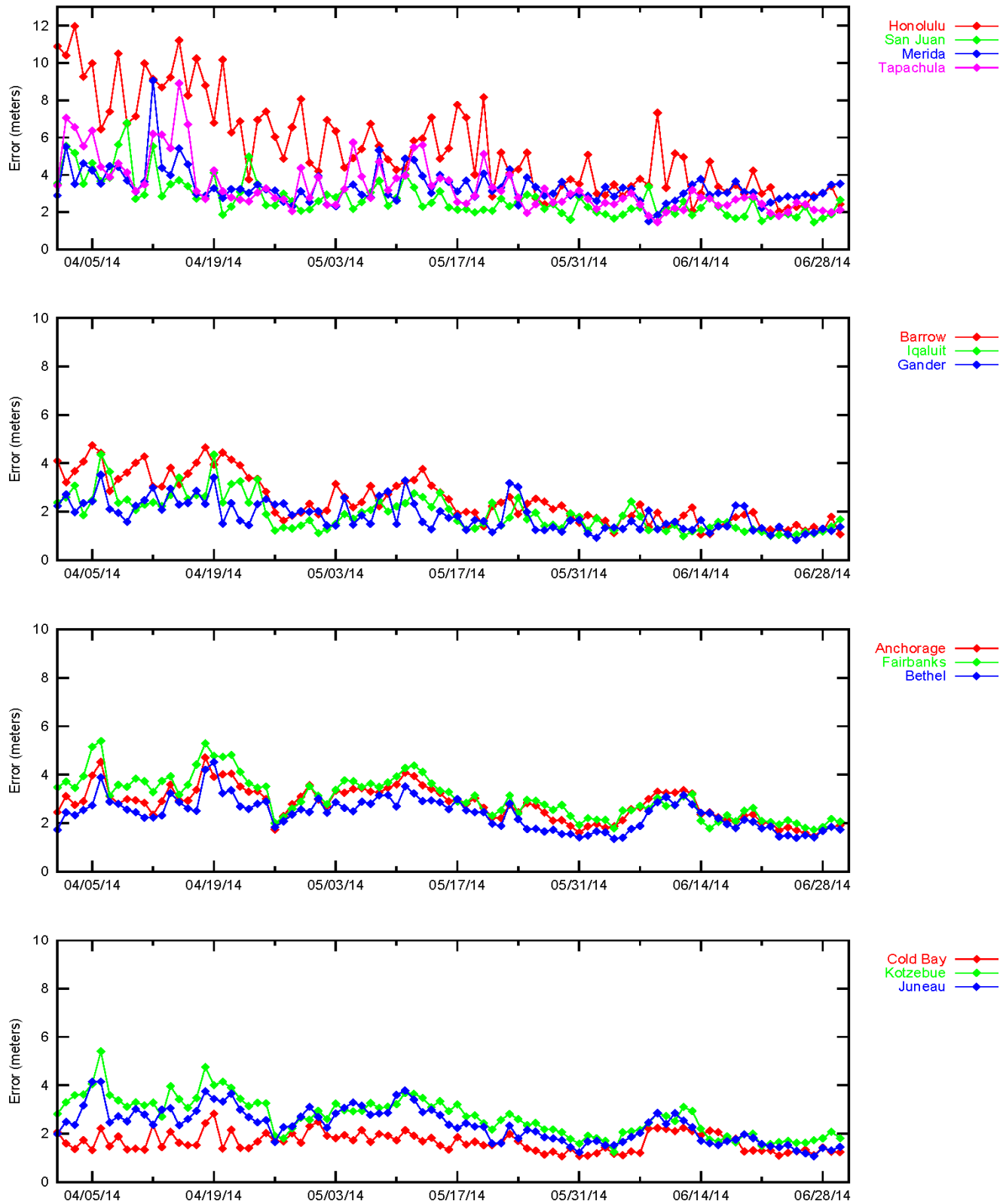


Figure 2-8 NPA 95% Horizontal Accuracy

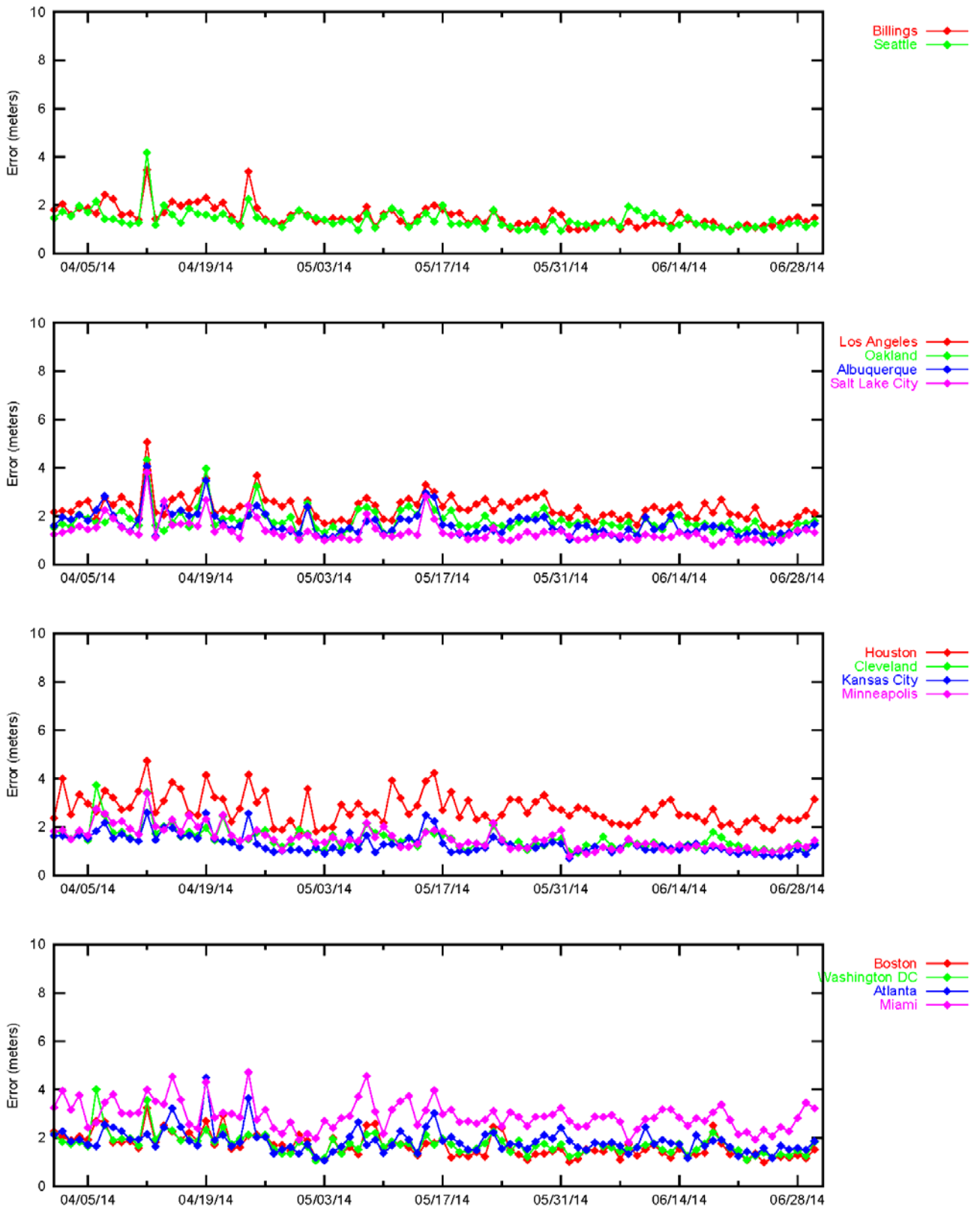


Figure 2-9 LPV Horizontal Error Bounding Triangle Chart

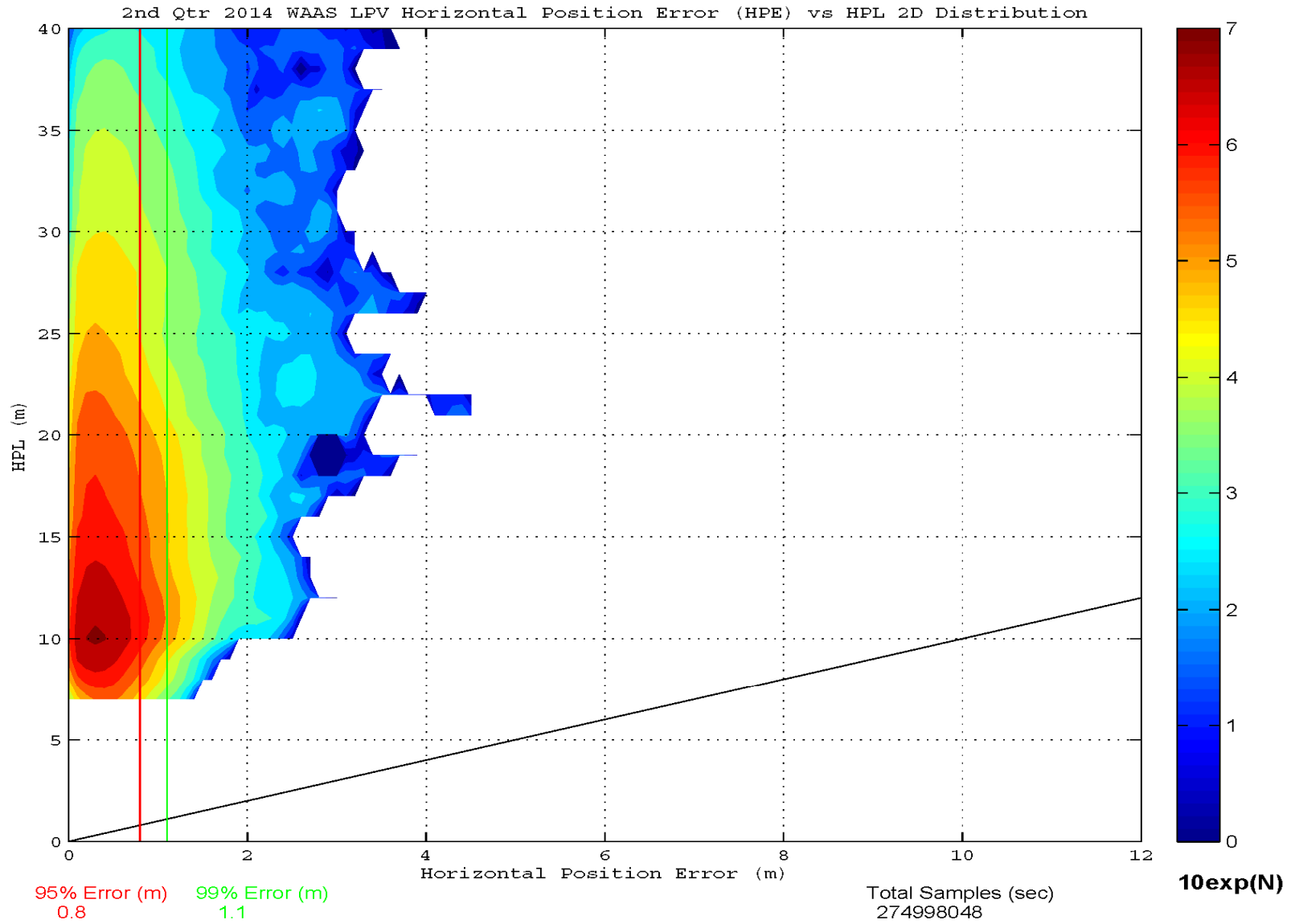


Figure 2-10 LPV Vertical Error Bounding Triangle Chart

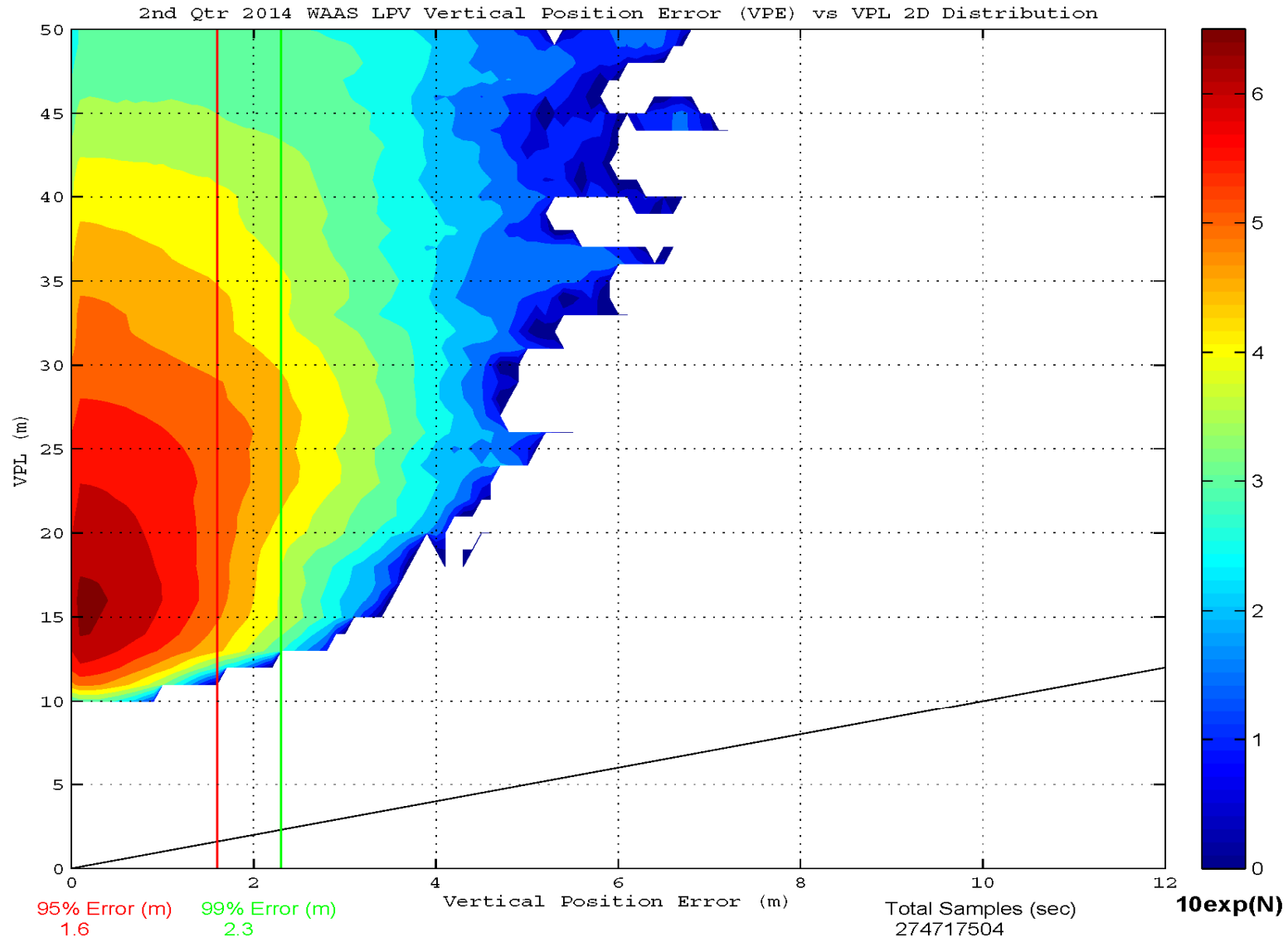


Figure 2-11 LPV 2-D Horizontal Error Distribution Histogram

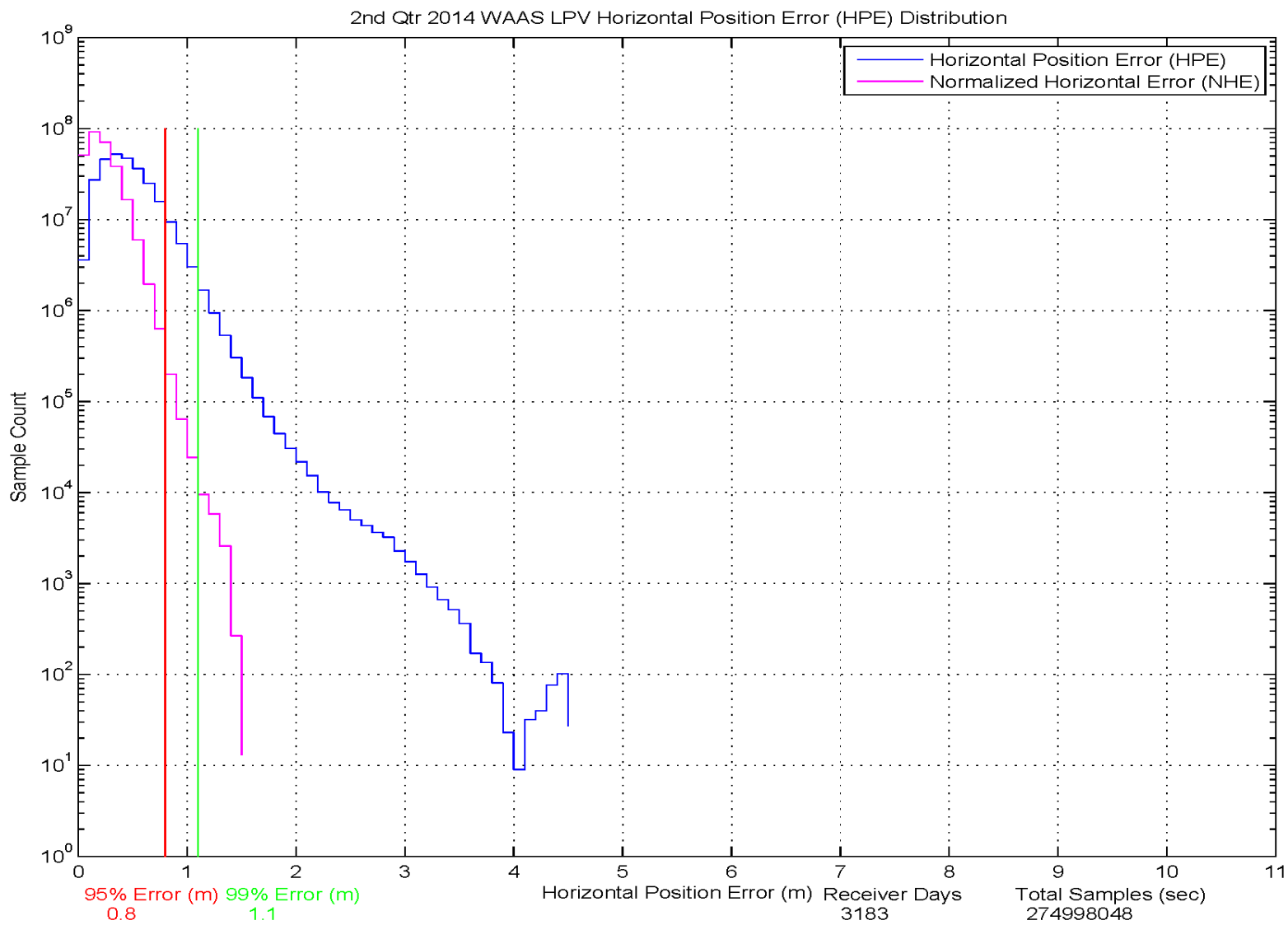
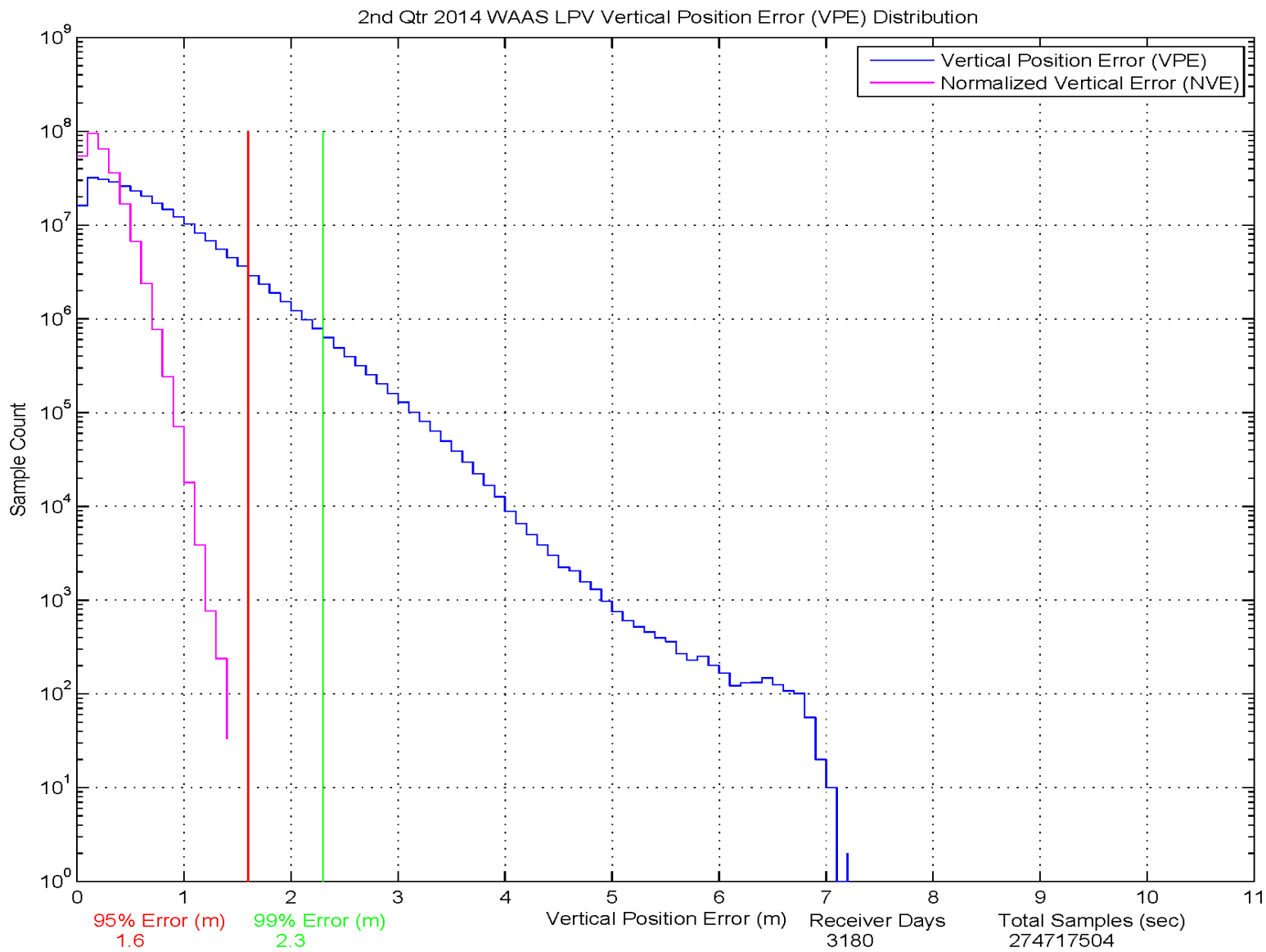


Figure 2-12 LPV 2-D Vertical Error Distribution Histogram



3.0 AVAILABILITY

The WAAS availability evaluation documents the percentage of time that the WAAS provided service for the operational service levels defined in Table 1-1. RTCA DO-229D Vertical and Horizontal Protection Levels were computed for each receiver being evaluated. Table 3-1 shows the protection levels that were maintained for 99% of the time for each receiver location for the quarter. The table also included the percentage in PA mode as described in section 2.0.

For this reporting period, the maximum 99% CONUS HPL and VPL are 17.992 meters at Miami and 32.776 meters at Oakland. The minimum 99% CONUS HPL and VPL are 11.67 meters at Kansas City and 21.009 meters at Memphis, respectively. The maximum 99% Alaska HPL and VPL are 29.62 meters and 39.067 meters, both at Cold Bay, respectively. The minimum 99% Alaska HPL and VPL are 14.273 meters at Fairbanks and 24.43 meters at Anchorage, respectively.

Availability of LP, LPV and LPV 200 service are evaluated by monitoring the WAAS protection levels at receiver locations throughout the test period. If both the vertical and horizontal protection levels are not greater than their respective alert limits (VAL and HAL) then the service is available. If either of the protection levels exceeds the required alert limit then the operational service at that location is considered unavailable and an outage in service is recorded with its duration. The operational service is not considered available again until the protection levels are both within the alert limits for at least 15 minutes. Although this will reduce operational service availability minimally, it substantially reduces the number of service outages and prevents excessive switching in and out of service availability. The percent of time that LP, LPV, and LPV 200 service is available using the fifteen-minute window criteria is presented in Table 3-2. The LP, LPV, and LPV 200 service outages and associated outage rate for the reporting period is presented in Table 3-4. The outage rate is the percent of approaches that theoretically would be interrupted by a loss of operational service once the approach had started. Figures 3-1 to 3-6 show the daily availability of LPV and LPV 200 service levels. Figures 3-7 to 3-12 show the daily interruptions of LPV and LPV 200 service levels for the evaluation period.

Availability of NPA service is evaluated by monitoring the WAAS horizontal protection level at receiver locations throughout the test period. If the horizontal protection level is not greater than the horizontal alert limit (HAL = 556m) then the service is available. If the horizontal protection level exceeds the required alert level or if WAAS navigation message is not received then the NPA service at that location is considered unavailable and an outage in service is recorded with its duration. The NPA service is not considered available again until the horizontal protection level is within the alert limit for at least 15 minutes. The percent of time that NPA service is available using the fifteen-minute window criteria is presented in Table 3-3. The NPA service outages and associated outage rate for this period is presented in Table 3-5. The outage rate is the percent of NPA approaches that theoretically would be interrupted by a loss of operational service once the approach had started.

Low PA and NPA availability for this reporting period are due to GPS satellite outages, carrier phase anomalies, communication outages, GUS switchovers, geomagnetic activity, and elevated GIVE and UDRE values. The major events are discussed below. Please refer to Table 1-5 for all the events that affected availability.

Low NPA availability at Kotzebue and Barrow was due to CRW GEO (PRN-135) Signal-in-Space outage on June 3.

Two GUS switchovers on CRW GEO (PRN-135) resulted in the loss of Alaska LPV200 availability on June 18; see [DR #124 Loss of LPV-200 Service in Central CONUS June 18 2014](#).

Significant events that reduced availability in CONUS were observed on the following days: On April 3, elevated GIVE values reduced CONUS LPV200 availability. On April 12, elevated GIVE values due to geomagnetic activity reduced CONUS LPV and LPV200 availability; see [DR #123 Effect on WAAS from Iono Activity April 11-12 2014](#). On April 15, a NANU on PRN-31 reduced CONUS LPV and LPV200 availability. On April 18 and 19, high GIVE values reduced CONUS LPV and LPV200 availability. On May 8, a manual GUS switchover on CRE GEO (PRN-138) and a NANU on PRN-23 reduced CONUS LPV200 availability in CONUS.

Significant events that affected Alaska availability were observed on the following days: On April 12, geomagnetic activity caused a loss of Alaska LPV and LPV200 availability; see [DR #123 Effect on WAAS from Iono Activity](#)

[April 11-12 2014](#). On April 19, high GIVE values reduced Alaska LPV and LPV200 availability. On May 4, high GIVE values reduced Alaska LPV and LPV200 availability at the beginning of the day.

Significant events that affected Canada availability were observed on the following days: On April 12, elevated GIVE values reduced Canada LPV and LPV200 availability. On April 15, a NANU on PRN-31 reduced Canada LPV and LPV200 availability. On May 23, high GIVE values caused a reduction in Canada LPV and LPV200 availability.

Radio frequency interference (RFI) caused localized loss of LPV/LPV200 availability at Washington D.C. reference station on May 24.

Table 3-1 99% Protection Level

Location	99% HPL (meters)	99% VPL (meters)	Percentage in PA mode
Atlantic City	14.129	22.776	100
Grand Forks	16.263	24.915	100
Oklahoma City	12.401	23.785	100
Albuquerque	12.558	25.102	100
Anchorage	14.765	24.430	100
Atlanta	12.460	22.143	100
Barrow	18.761	37.052	99.934570
Bethel	18.720	30.767	100
Billings	15.270	23.237	100
Boston	15.581	21.892	100
Chicago	12.042	22.792	100
Cleveland	13.646	23.956	100
Cold Bay	28.620	39.067	100
Dallas	13.084	22.729	100
Denver	12.682	24.915	100
Fairbanks	14.273	25.021	100
Gander	28.111	43.756	100
Goose Bay	23.259	31.149	100
Houston	12.211	23.741	100
Iqaluit	33.949	48.279	100
Jacksonville	14.113	23.368	100
Juneau	14.758	24.098	100
Kansas City	11.670	24.485	100
Kotzebue	17.139	33.881	99.934580
Los Angeles	14.854	28.388	100
Memphis	11.760	21.009	100
Merida	19.678	33.506	100
Mexico City	31.385	42.995	100
Miami	17.992	26.548	100
Minneapolis	12.593	25.345	100
New York	14.724	22.747	100
Oakland	17.638	32.776	100
Puerto Vallarta	35.637	57.941	100
Salt Lake City	13.868	21.797	100
San Jose Del Cabo	29.559	44.287	100
Seattle	15.294	28.399	100
Washington DC	13.139	23.224	100
Winnipeg	16.491	23.414	100

Table 3-2 Quarterly Availability Statistics

Location	LP WAAS With 15 minute window	LPV WAAS With 15 minute window	LPV 200 WAAS With 15 minute window
Atlantic City	0.999981	0.999915	0.999512
Bangor	1	1	0.999823
Grand Forks	0.999428	0.999416	0.99925
Oklahoma City	1	1	0.999674
Albuquerque	1	1	1
Anchorage	0.999824	0.999587	0.999351
Atlanta	1	1	0.999874
Barrow	0.999011	0.998316	0.972188
Bethel	1	0.99997	0.99917
Billings	0.999974	0.999696	0.999514
Boston	1	0.999856	0.999583
Chicago	1	1	0.999882
Cleveland	1	1	0.999701
Cold Bay	1	0.999809	0.927469
Dallas	1	1	1
Denver	1	1	0.999887
Fairbanks	0.999678	0.99954	0.999197
Gander	0.999991	0.998269	0.890443
Goose Bay	0.999664	0.999096	0.996626
Houston	1	1	0.999938
Iqaluit	0.996864	0.989537	0.884014
Jacksonville	1	1	0.999836
Juneau	0.999568	0.999368	0.999075
Kansas City	1	1	1
Kotzebue	0.999302	0.998977	0.992179
Los Angeles	1	1	0.999974
Memphis	1	1	0.999879
Merida	0.999949	0.998634	0.99398
Mexico City	0.999304	0.997595	0.899925
Miami	1	0.999974	0.99916
Minneapolis	0.999837	0.999702	0.999607
New York	1	0.999895	0.999639
Oakland	0.999992	0.999992	0.99264
Puerto Vallarta	0.998701	0.976528	0.841939
Salt Lake City	1	1	1
San Jose Del Cabo	0.999436	0.996029	0.912863
Seattle	1	1	0.999662
Washington DC	1	0.999996	0.999548
Winnipeg	0.999026	0.998928	0.998679

Table 3-3 NPA Availability

Location	NPA Availability (Excluding RAIM/FDE)
Albuquerque	1
Anchorage	1
Atlanta	1
Barrow	0.99934709
Bethel	1
Billings	1
Boston	1
Cleveland	1
Cold Bay	1
Fairbanks	1
Gander	1
Honolulu	1
Houston	1
Iqaluit	1
Juneau	1
Kansas City	1
Kotzebue	0.99934725
Los Angeles	1
Merida	1
Miami	1
Minneapolis	1
Oakland	1
Salt Lake City	1
San Jose Del Cabo	1
San Juan	1
Seattle	1
Tapachula	1
Washington DC	1

Table 3-4 LPV and LPV 200 Outage Rate (Per 150 sec approach)

Location	LP Outages	LP Outage Rates	LPV Outages	LPV Outage Rates	LPV 200 Outages	LPV 200 Outage Rates
Atlantic City	1	0.00002	2	0.000039	2	0.000039
Bangor	0	0	0	0	4	0.000278
Grand Forks	3	0.000059	3	0.000059	6	0.000117
Oklahoma City	0	0	0	0	5	0.000106
Albuquerque	0	0	0	0	0	0
Anchorage	1	0.000019	1	0.000019	2	0.000039
Atlanta	0	0	0	0	1	0.000019
Barrow	3	0.000058	9	0.000174	226	0.004486
Bethel	0	0	2	0.000039	8	0.000154
Billings	1	0.000019	1	0.000019	3	0.000058
Boston	0	0	1	0.000019	1	0.000019
Chicago	0	0	0	0	1	0.000019
Cleveland	0	0	0	0	1	0.000019
Cold Bay	0	0	3	0.000058	429	0.008925
Dallas	0	0	0	0	1	0.000019
Denver	0	0	0	0	1	0.000019
Fairbanks	1	0.000019	3	0.000058	4	0.000077
Gander	1	0.000019	10	0.000193	616	0.013351
Goose Bay	2	0.000039	4	0.000077	23	0.000445
Houston	0	0	0	0	1	0.000019
Iqaluit	25	0.000485	126	0.002461	727	0.015895
Jacksonville	0	0	0	0	1	0.000019
Juneau	1	0.000019	2	0.000039	3	0.000058
Kansas City	0	0	0	0	0	0
Kotzebue	3	0.000058	4	0.000077	87	0.001692
Los Angeles	0	0	0	0	3	0.000058
Memphis	0	0	0	0	1	0.000019
Merida	1	0.000019	54	0.001044	111	0.002156
Mexico City	7	0.000135	42	0.000814	724	0.015546
Miami	0	0	1	0.000019	4	0.000077
Minneapolis	1	0.000019	1	0.000019	2	0.000039
New York	0	0	1	0.000019	1	0.000019
Oakland	1	0.000019	1	0.000019	122	0.002371
Puerto Vallarta	12	0.000232	152	0.003004	728	0.01669
Salt Lake City	0	0	0	0	0	0
San Jose Del Cabo	5	0.000097	127	0.002461	617	0.013046
Seattle	0	0	0	0	5	0.000097
Washington DC	0	0	1	0.000019	4	0.000077
Winnipeg	2	0.000039	3	0.000058	2	0.000039

Table 3-5 NPA Outage Rates (Excluding FD/FDE)

Location	NPA Outages	NPA Outage Rate
Albuquerque	0	0
Anchorage	0	0
Atlanta	0	0
Barrow	1	0.00002
Bethel	0	0
Billings	0	0
Boston	0	0
Cleveland	0	0
Cold Bay	0	0
Fairbanks	0	0
Gander	0	0
Honolulu	0	0
Houston	0	0
Iqaluit	0	0
Juneau	0	0
Kansas City	0	0
Kotzebue	1	0.00002
Los Angeles	0	0
Merida	0	0
Miami	0	0
Minneapolis	0	0
Oakland	0	0
Salt Lake City	0	0
San Jose Del Cabo	0	0
San Juan	0	0
Seattle	0	0
Tapachula	0	0
Washington DC	0	0

Figure 3-1 LPV Instantaneous Availability

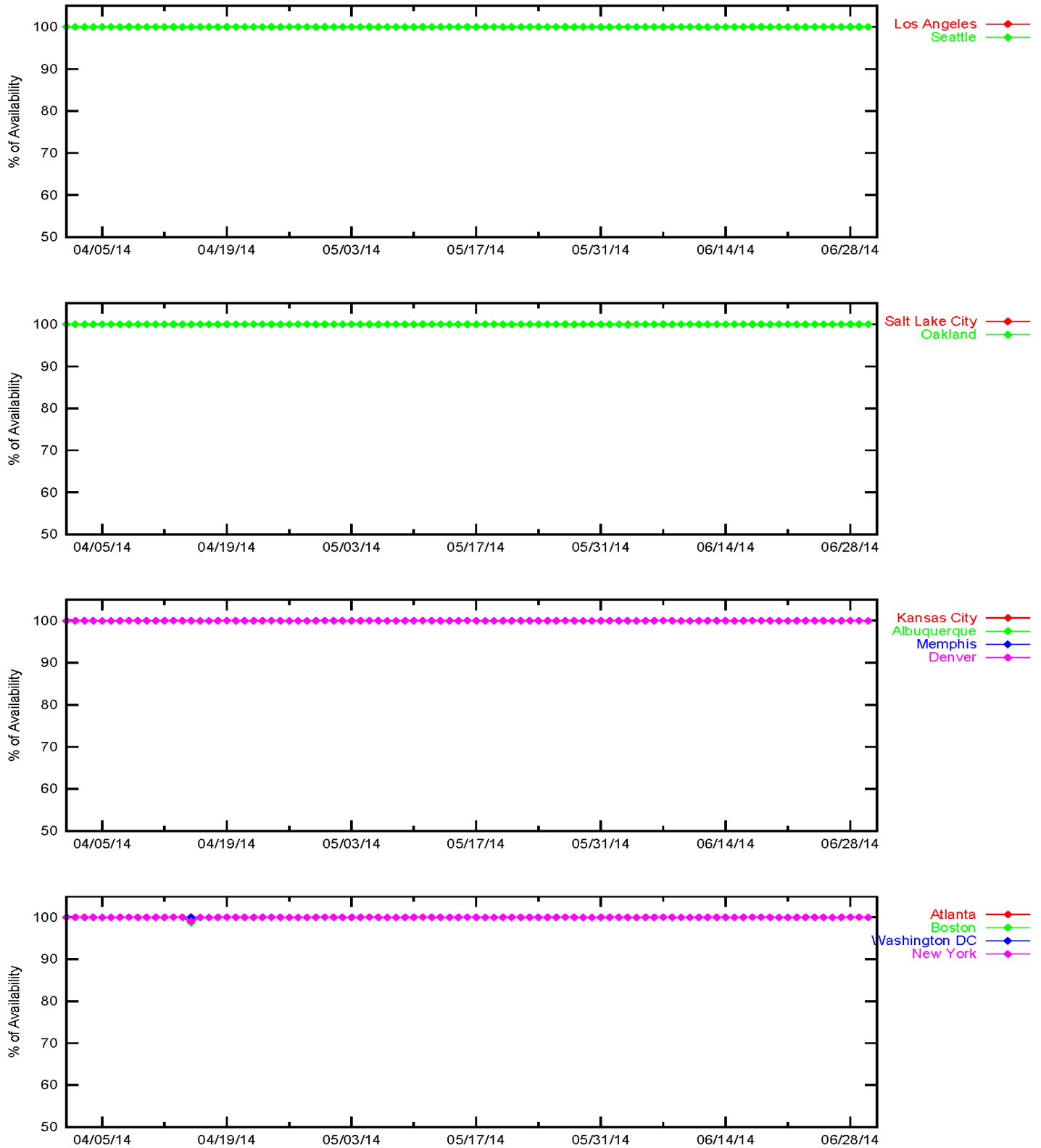


Figure 3-2 LPV Instantaneous Availability

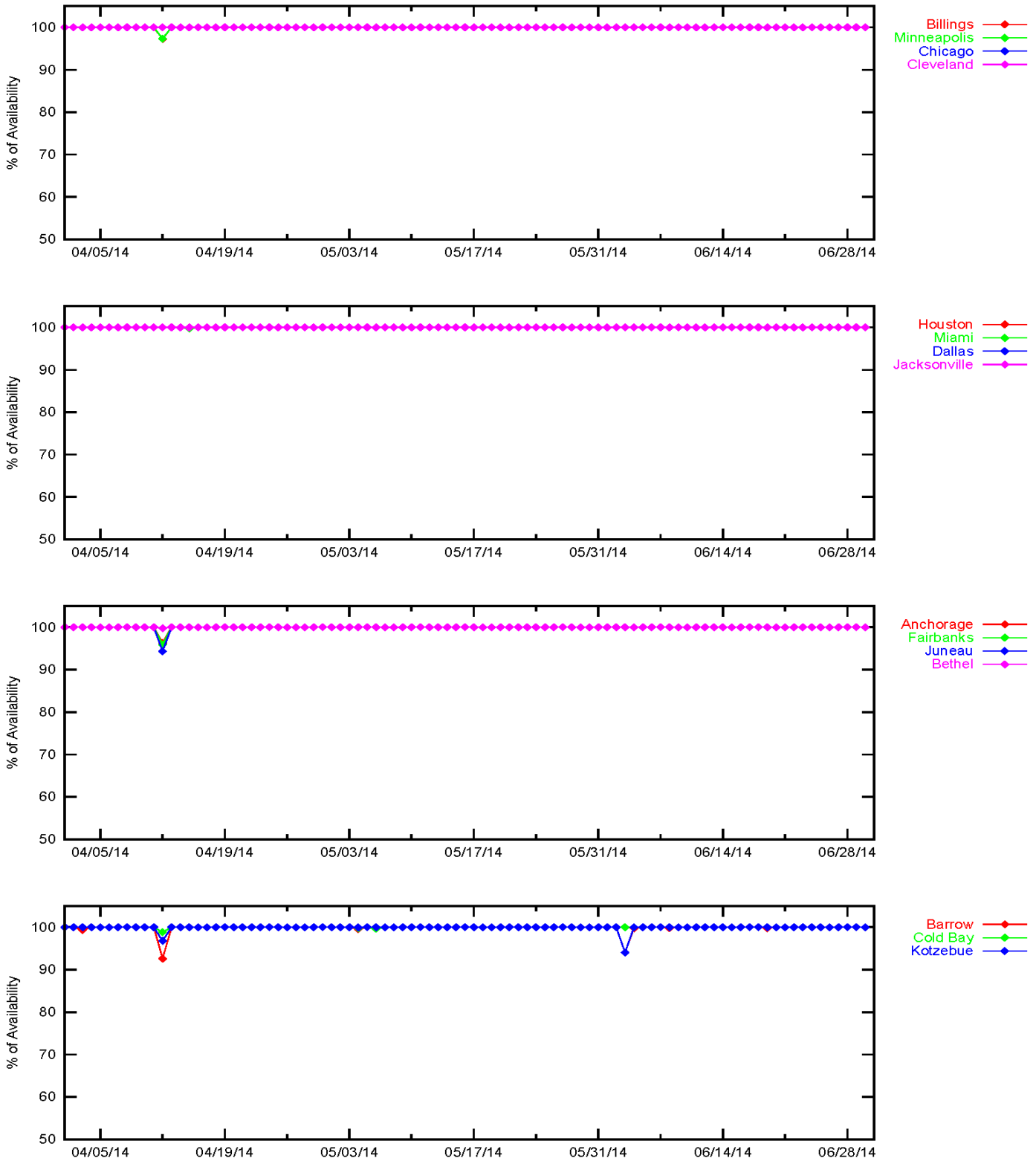


Figure 3-3 LPV Instantaneous Availability

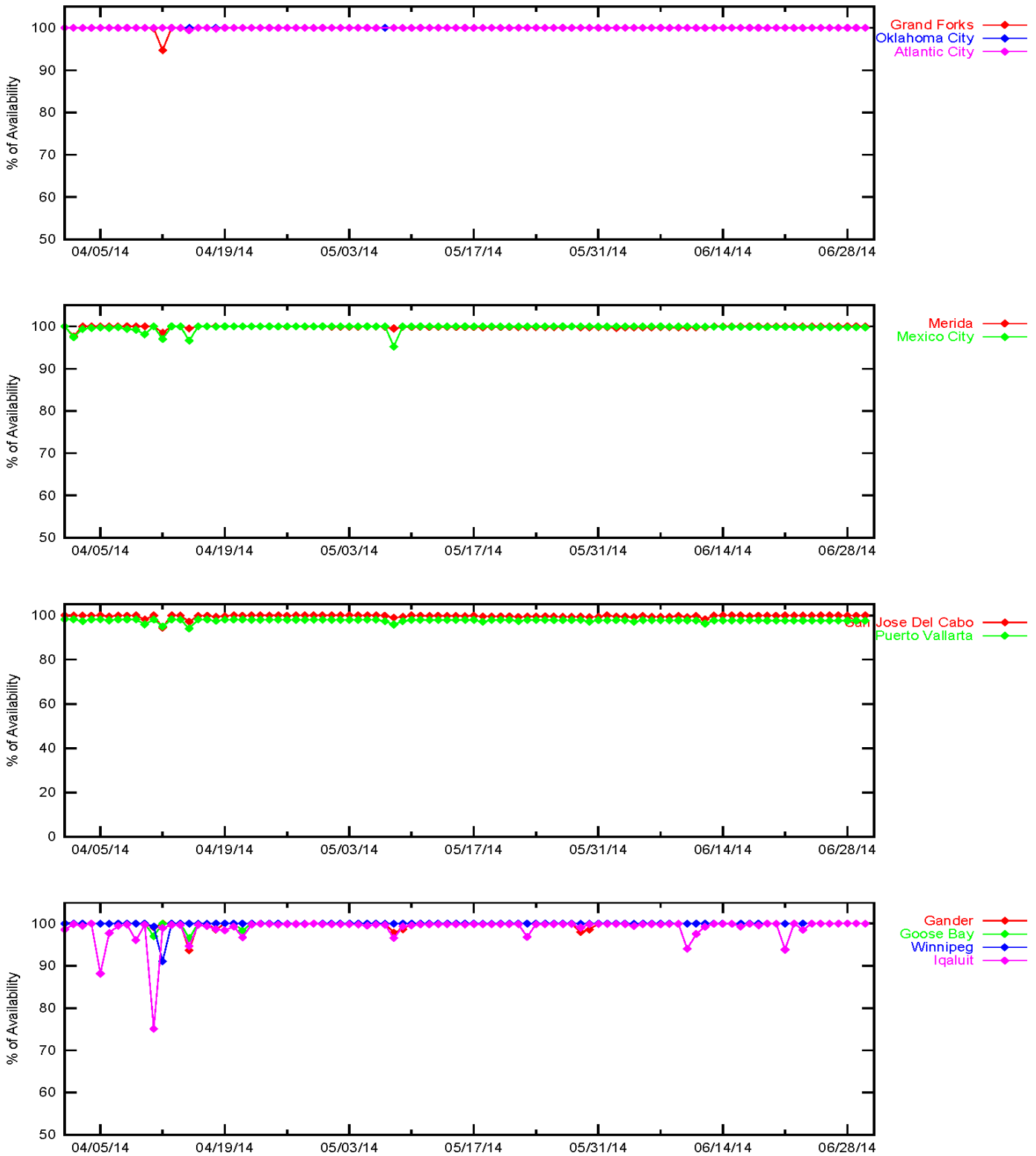


Figure 3-4 LPV 200 Instantaneous Availability

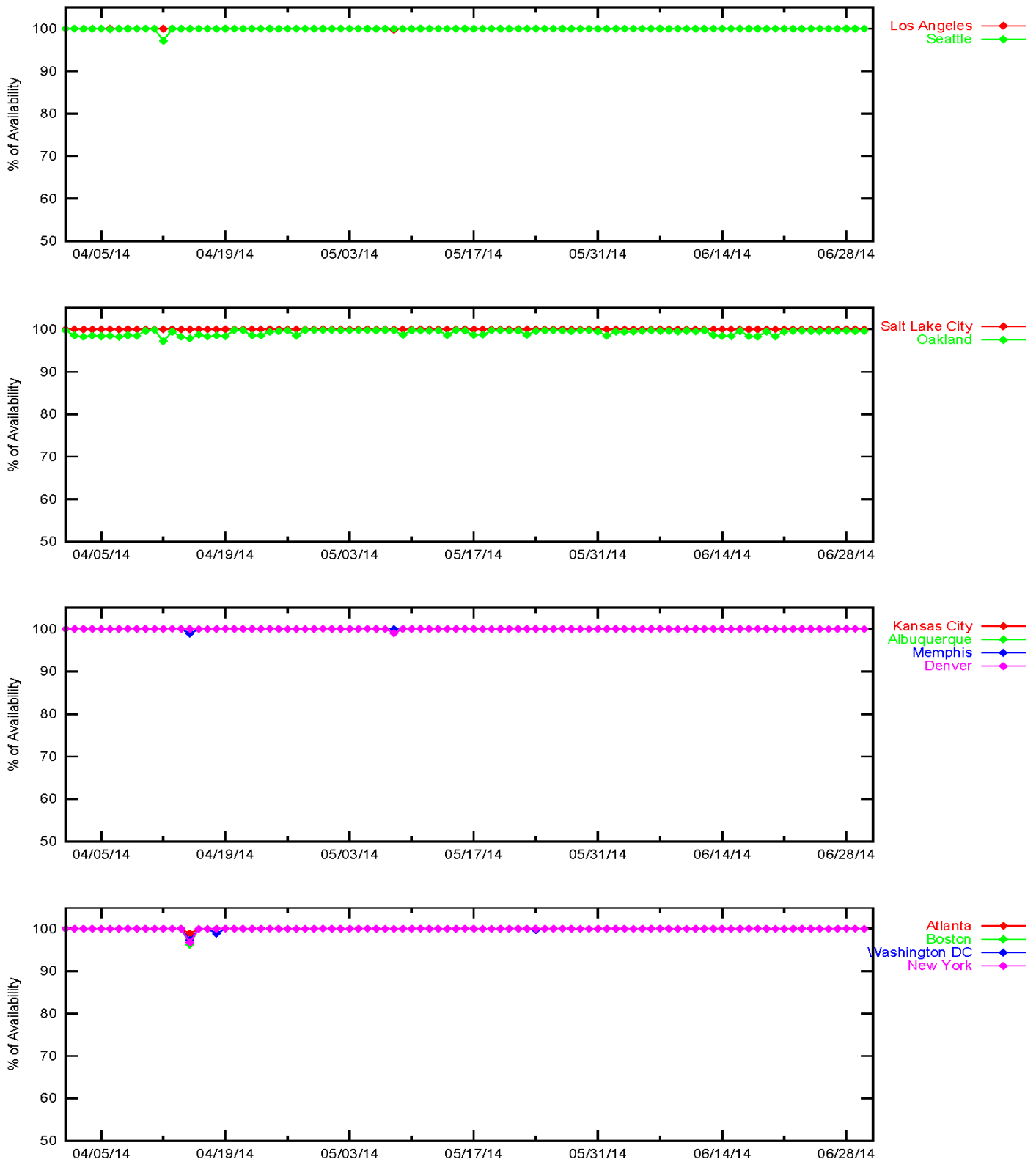


Figure 3-5 LPV 200 Instantaneous Availability

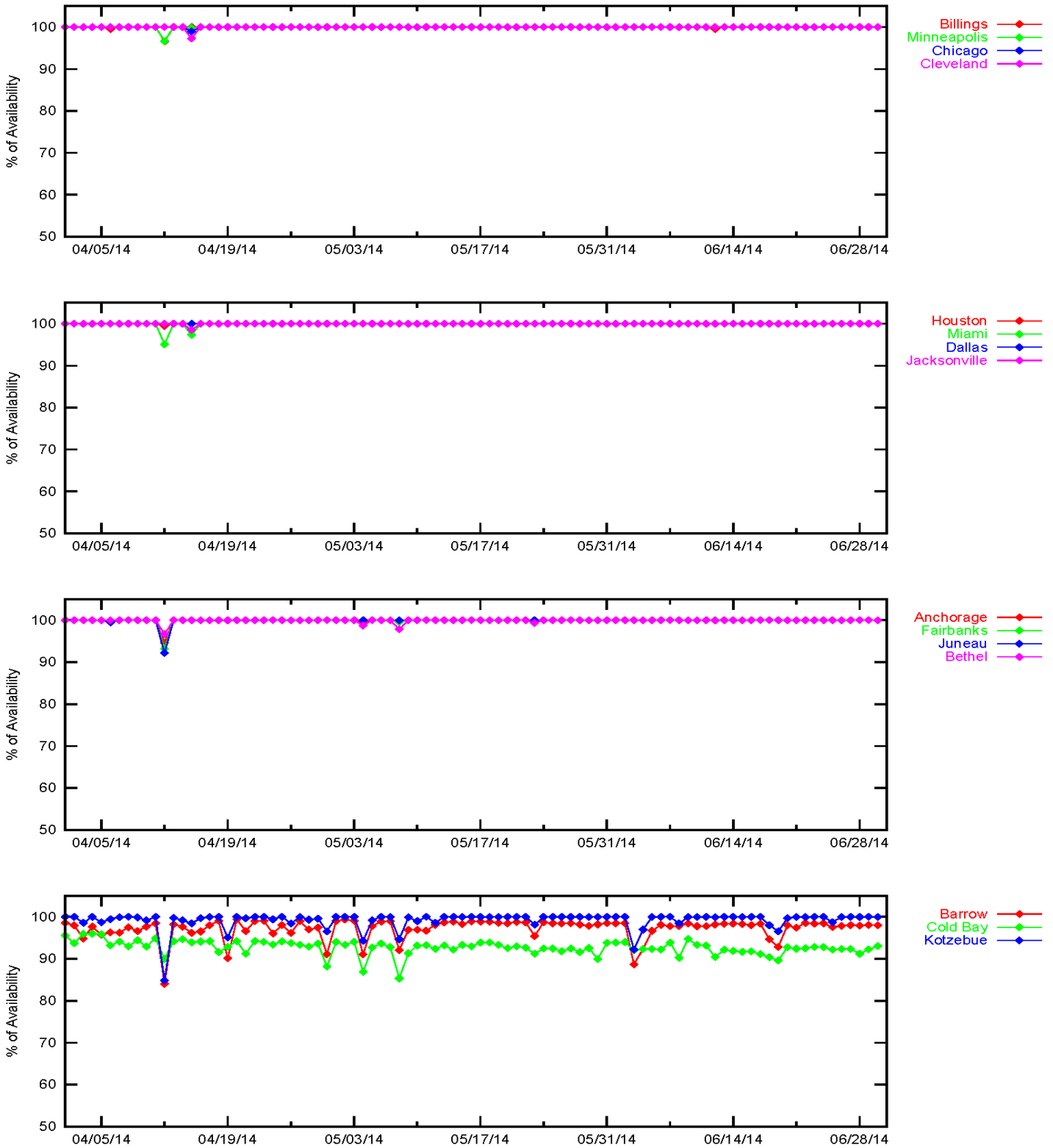


Figure 3-6 LPV 200 Instantaneous Availability

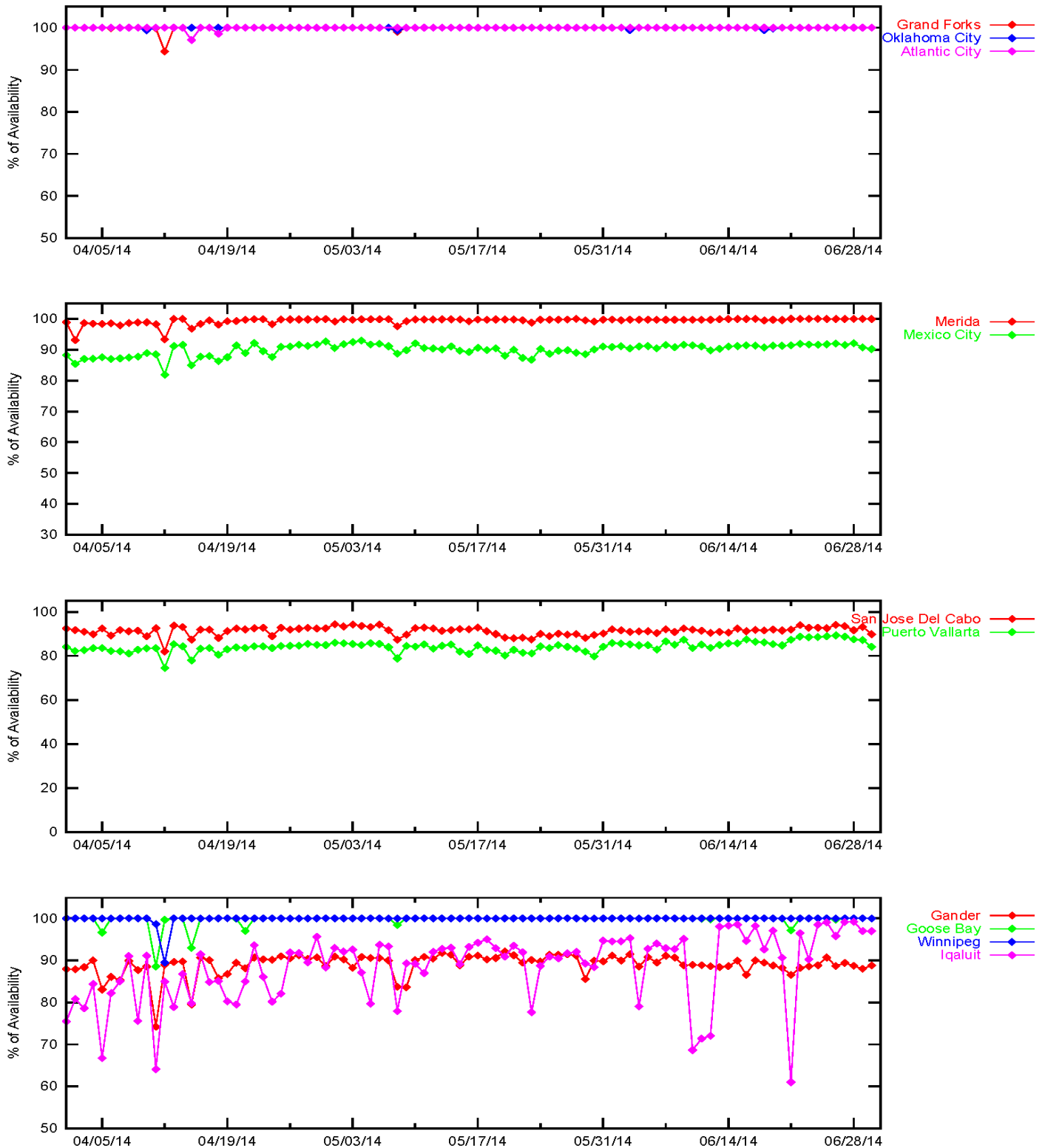


Figure 3-7 LPV Outages

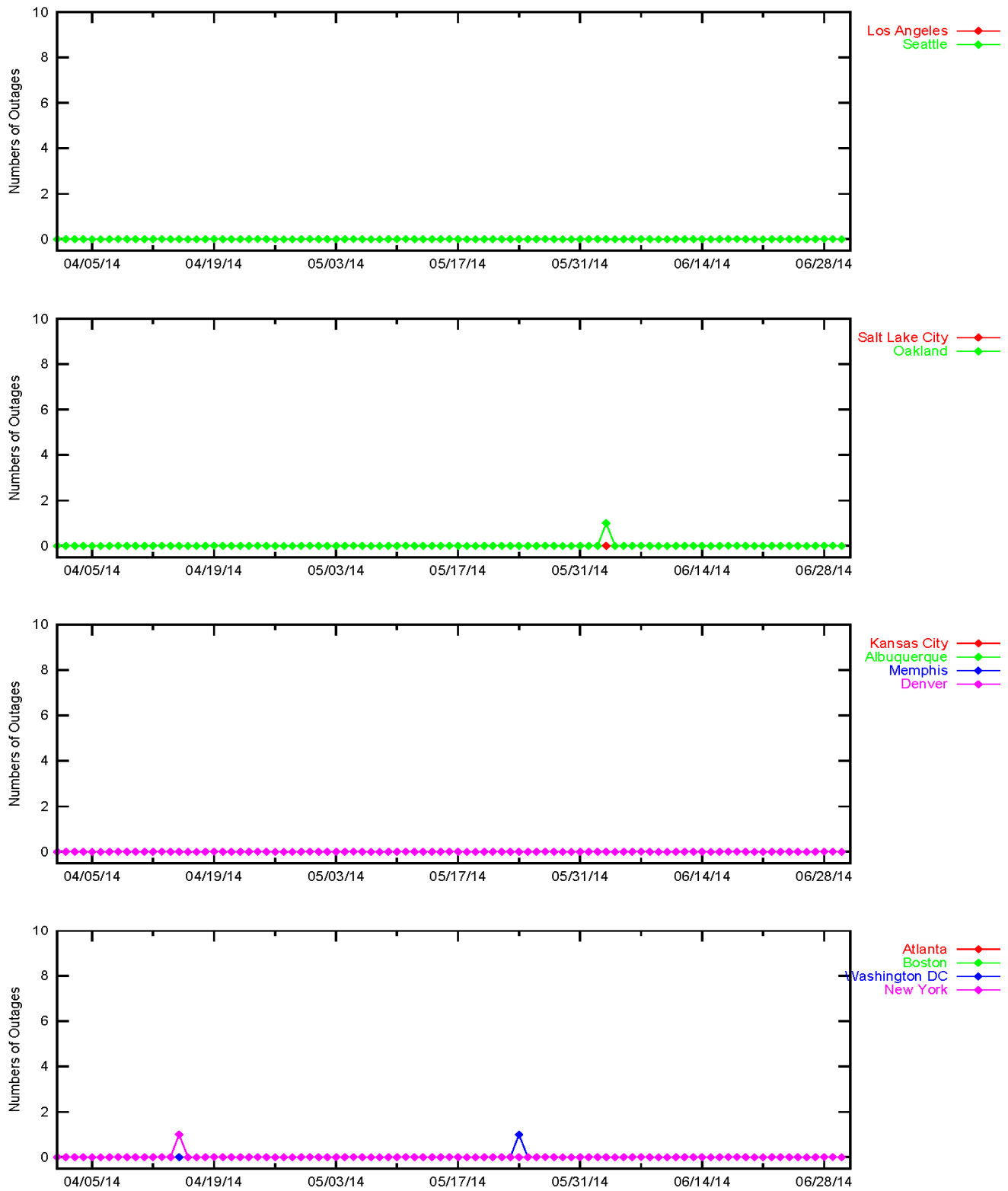


Figure 3-8 LPV Outages

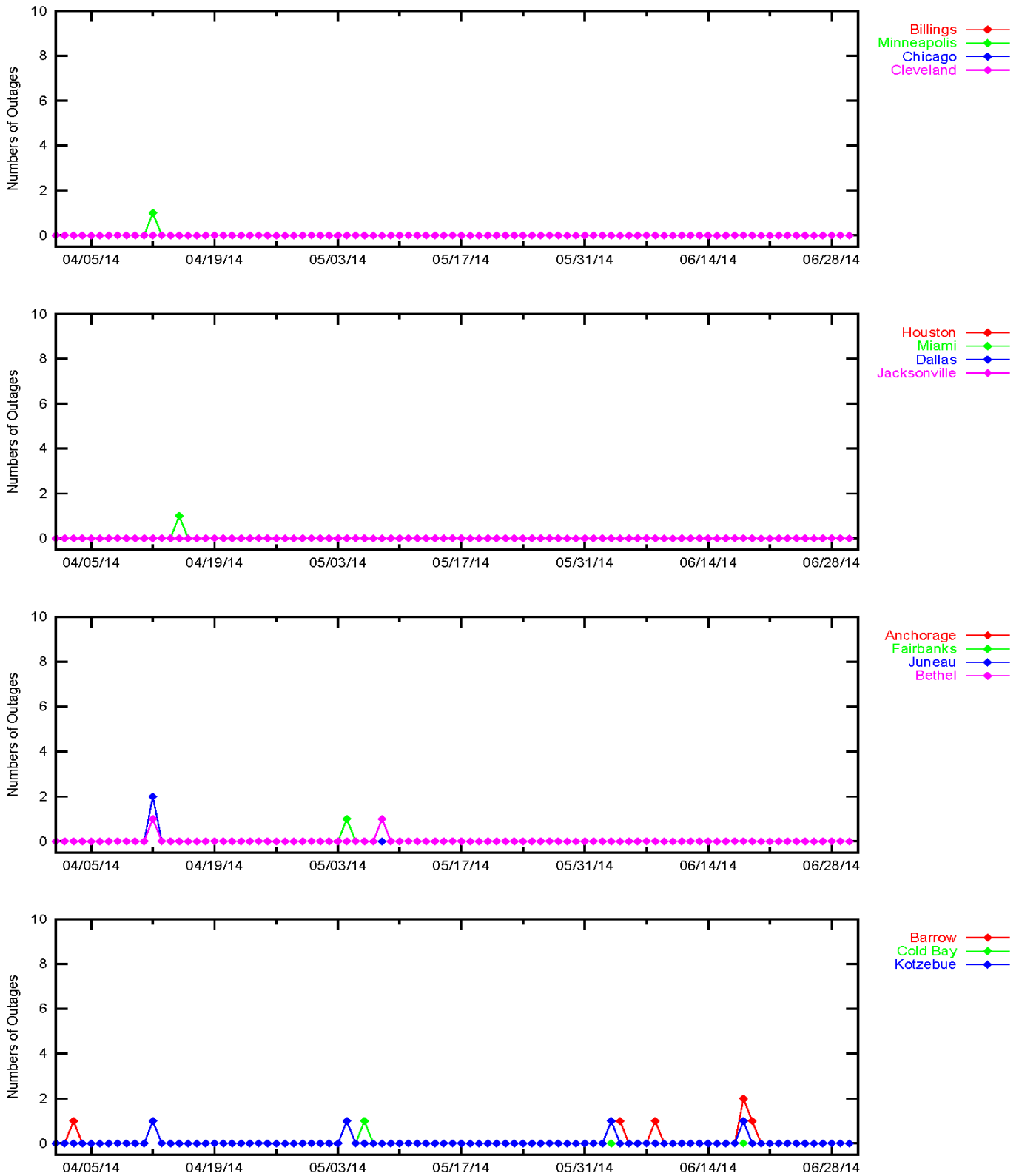


Figure 3-9 LPV Outages

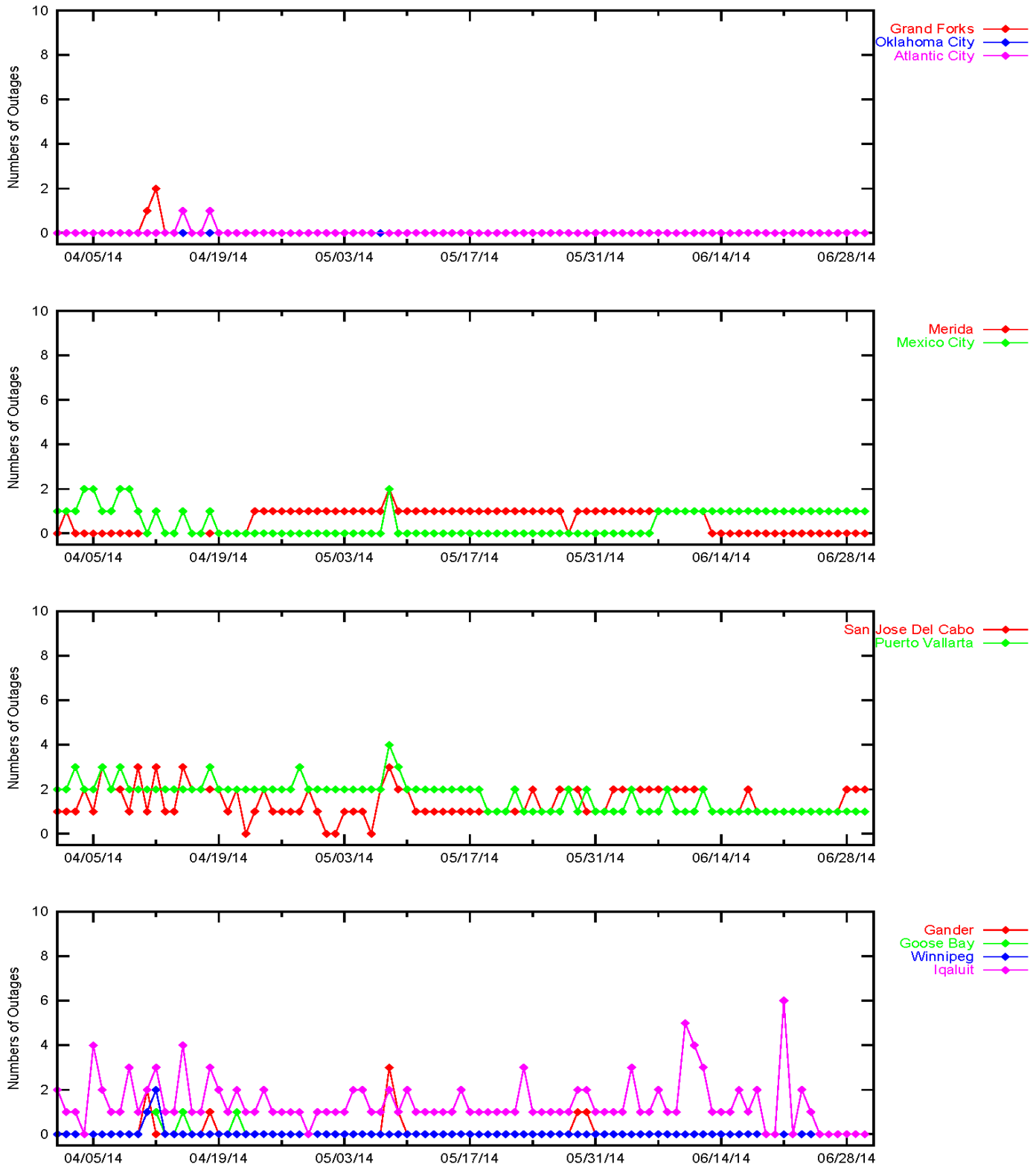


Figure 3-10 LPV 200 Outages

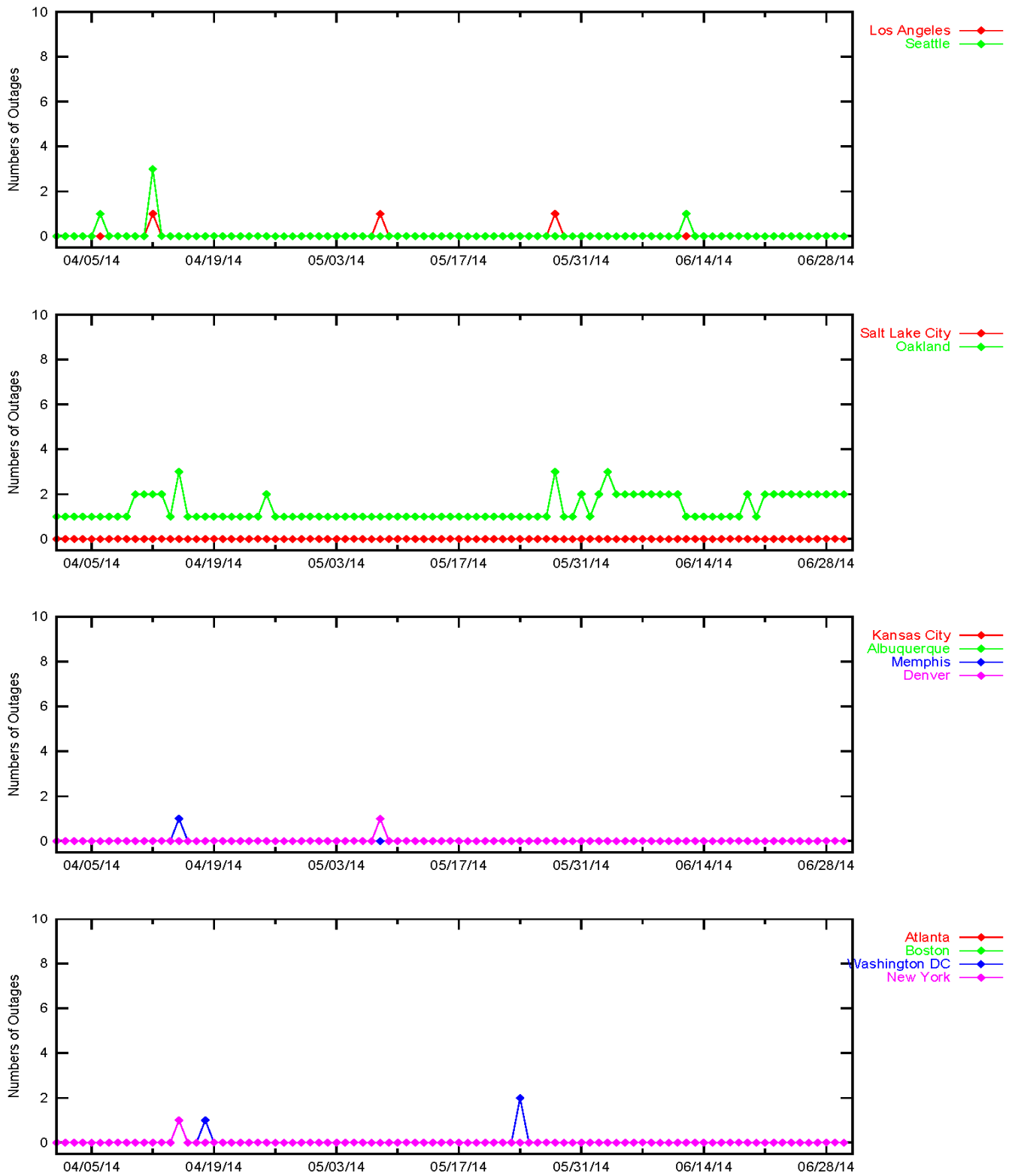


Figure 3-11 LPV 200 Outages

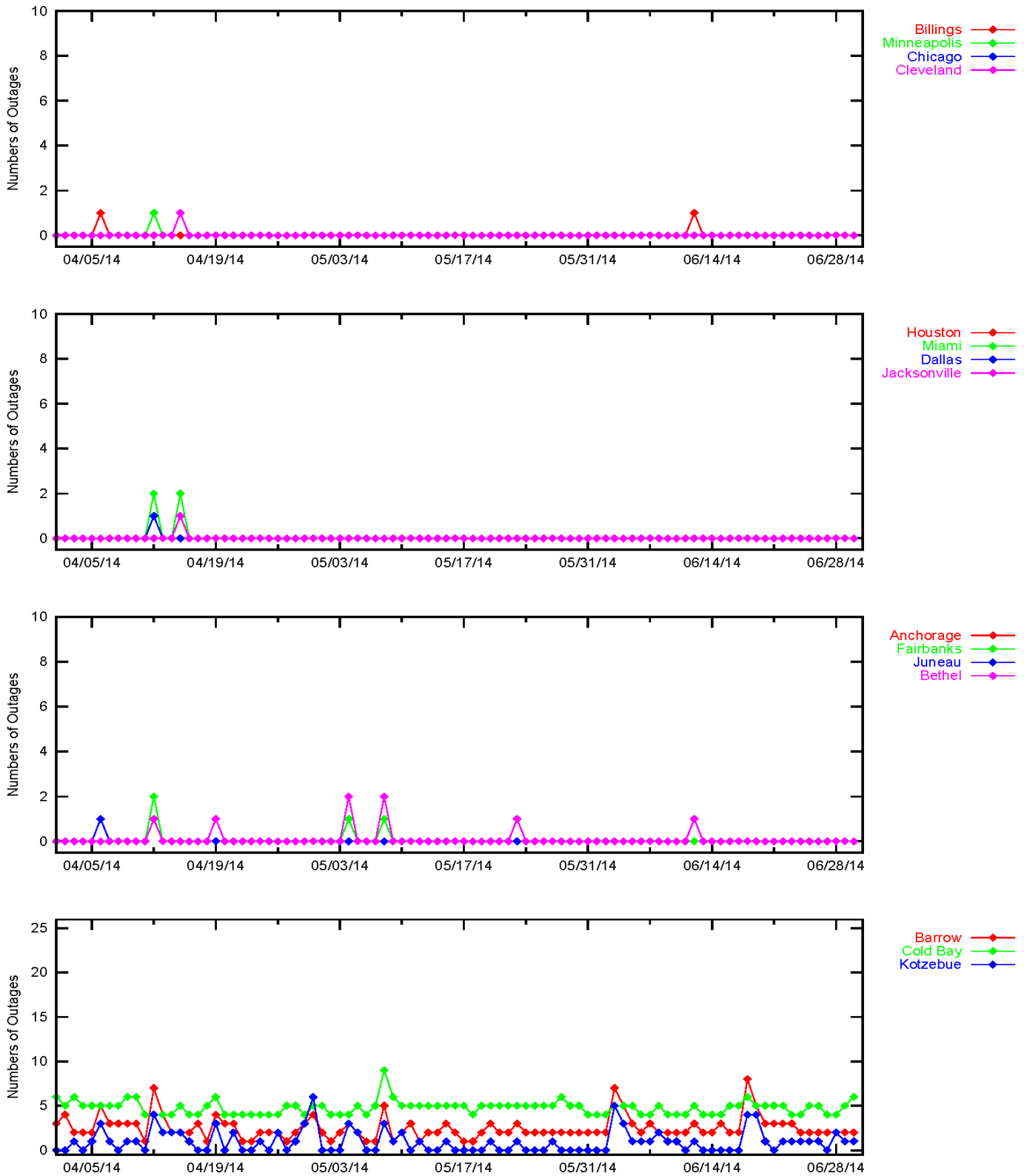
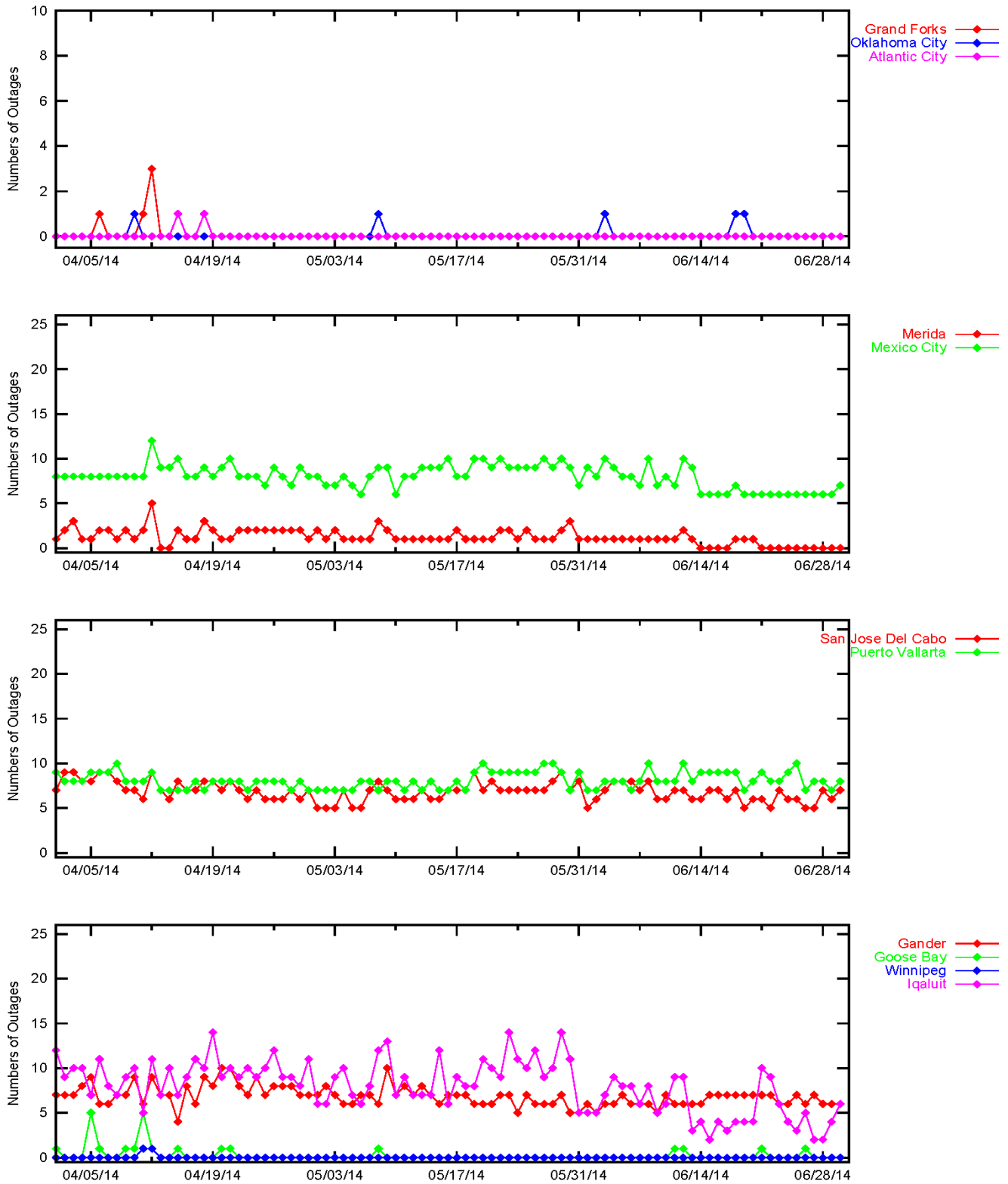


Figure 3-12 LPV 200 Outages



4.0 COVERAGE

The WAAS coverage area evaluation estimates the percent of service volume where WAAS provided service for the operational service levels defined in Table 1-1. The WAAS message and the GPS/GEO satellite status are used to determine WAAS availability across North America. For PA coverage, protection levels were calculated at 30-sec intervals at one degree spacing over the PA service volume, while NPA coverage were calculated at 30-sec intervals at five degree spacing over the NPA service volume.

Daily analysis for PA was conducted for LP, LPV and LPV 200 service levels. The coverage plots provide 100, 99.9, 99, 98 and 95% availability contours. Figure 4-1 shows the rollup LP North America coverage. Figure 4-2 shows the rollup LPV North America coverage. Figure 4-3 shows the rollup LPV 200 North America coverage. Figure 4-6 shows the daily LPV and LPV 200 CONUS coverage, and Figure 4-7 shows the daily LPV Alaska coverage at 99% availability and ionosphere Kp index values for this quarter. Figure 4-8 shows the daily LPV and LPV 200 Canada coverage at 99% availability and ionosphere Kp index values for this quarter. Please see Appendix B for coverage plots of 98% LP and LPV availability contour, and 99% LPV 200 availability contour. Kp quantifies the disturbance in the earth's magnetic field and is an indicator of solar storms causing geomagnetic disturbances that can cause the ionosphere to become unpredictable. WAAS increases GIVE values making PA service unavailable when WAAS detects that the ionosphere is disturbed.

Daily analysis for NPA was conducted for RNP 0.1 and RNP 0.3 service levels based on a 100% availability requirement. RNP 0.1 service is asserted to be available when HPL is less than 185 meters and RNP 0.3 service is asserted to be available when HPL is less than 556 meters. The NPA coverage plots provide 100, 99.9 and 99% availability contours. Figure 4-4 shows the rollup RNP 0.1 coverage and Figure 4-5 shows the rollup RNP 0.3 coverage for the quarter. Figure 4-9 shows the daily RNP coverage at 100% availability and ionosphere Kp index values for this quarter.

The coverage decreases for this quarter were mostly due to GUS switchovers, satellite outages, carrier phase anomalies, geomagnetic activity, communication outages, and elevated UDRE and GIVE values. The major events are discussed below. To see all the events that affected coverage, please refer to Table 1-5.

Two GUS switchovers on CRW GEO (PRN-135) resulted in reduced Alaska LPV200 coverage on June 18; see [DR #124 Loss of LPV-200 Service in Central CONUS June 18 2014](#).

Significant events that reduced CONUS coverage in Figure 4-6 were observed on the following days: On April 3, elevated GIVE values reduced LPV200 coverage. On April 12, elevated GIVE values due to geomagnetic activity reduced LPV and LPV200 coverage; see [DR #123 Effect on WAAS from Iono Activity April 11-12 2014](#). On April 15, a NANU on PRN-31 reduced LPV and LPV200 coverage. On April 18 and 19, high GIVE values reduced LPV and LPV200 coverage. On May 8, a manual GUS switchover on CRE GEO (PRN-138) and a NANU on PRN-23 reduced LPV200 coverage in CONUS.

Significant events that reduced Alaska coverage in Figure 4-7 were observed on the following days: On April 12, geomagnetic activity caused a loss of LPV and LPV200 coverage. On April 19, high GIVE values reduced LPV and LPV200 coverage. On May 4, high GIVE values reduced LPV and LPV200 coverage at the beginning of the day. On May 8, a manual GUS switchover on CRE GEO (PRN-138) and a NANU on PRN-23 reduced LPV200 coverage.

Significant events that reduced Canada coverage in Figure 4-9 were observed on the following days: On April 12, elevated GIVE values reduced LPV and LPV200 coverage. On April 15, a NANU on PRN-31 reduced LPV and LPV200 coverage. On May 23, high GIVE values caused a reduction in LPV and LPV200 coverage.

The drops in RNP 0.1 and RNP 0.3 coverage on June 3 in Figure 4-8 were due to a CRW GEO (PRN-135) Signal-in-Space outage.

Figure 4-1 LP North America Coverage for the Quarter

**WAAS LP Coverage Contours
April 1 – June 30, 2014**

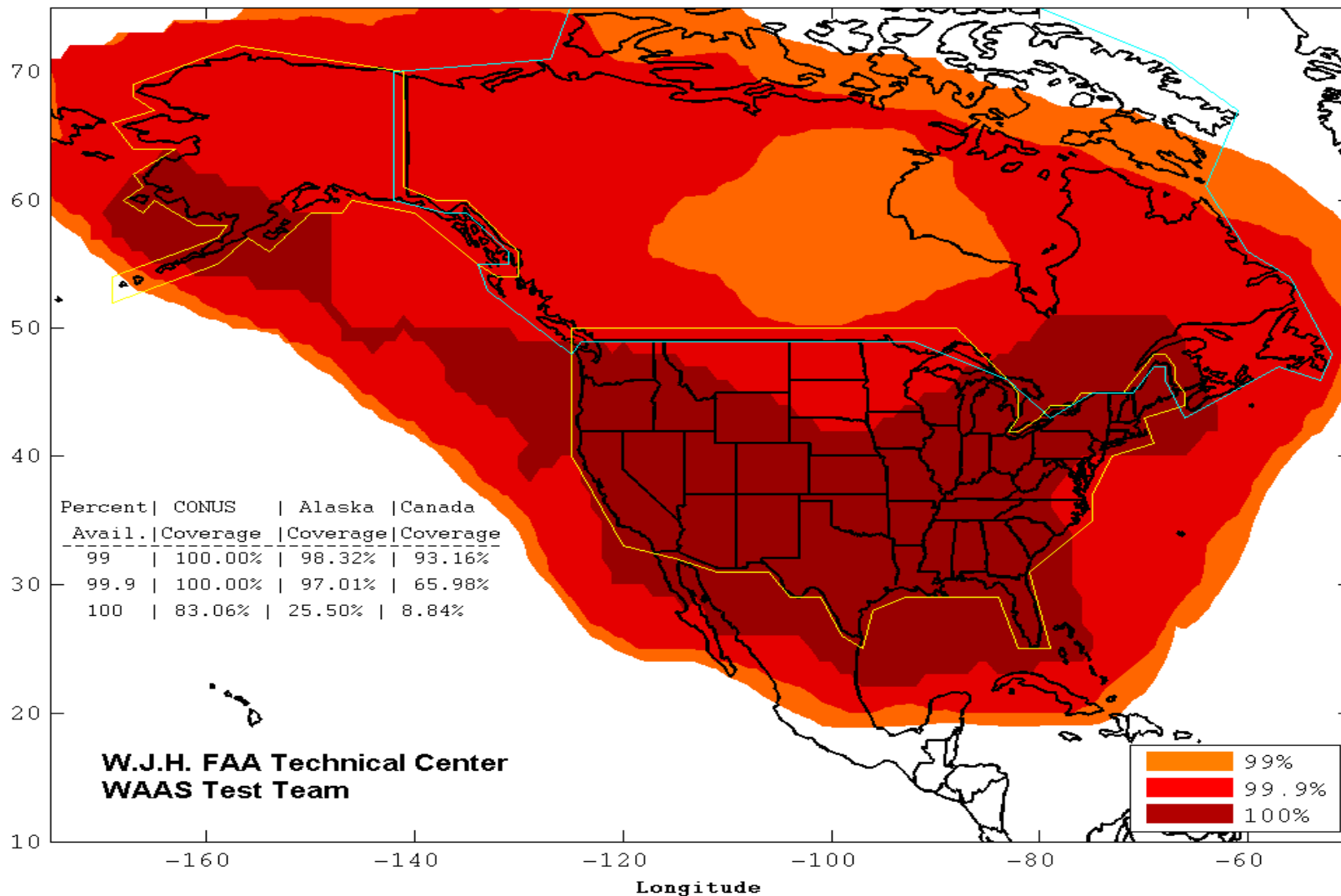


Figure 4-2 LPV North America Coverage for the Quarter
WAAS LPV Coverage Contours
April 1 – June 30, 2014

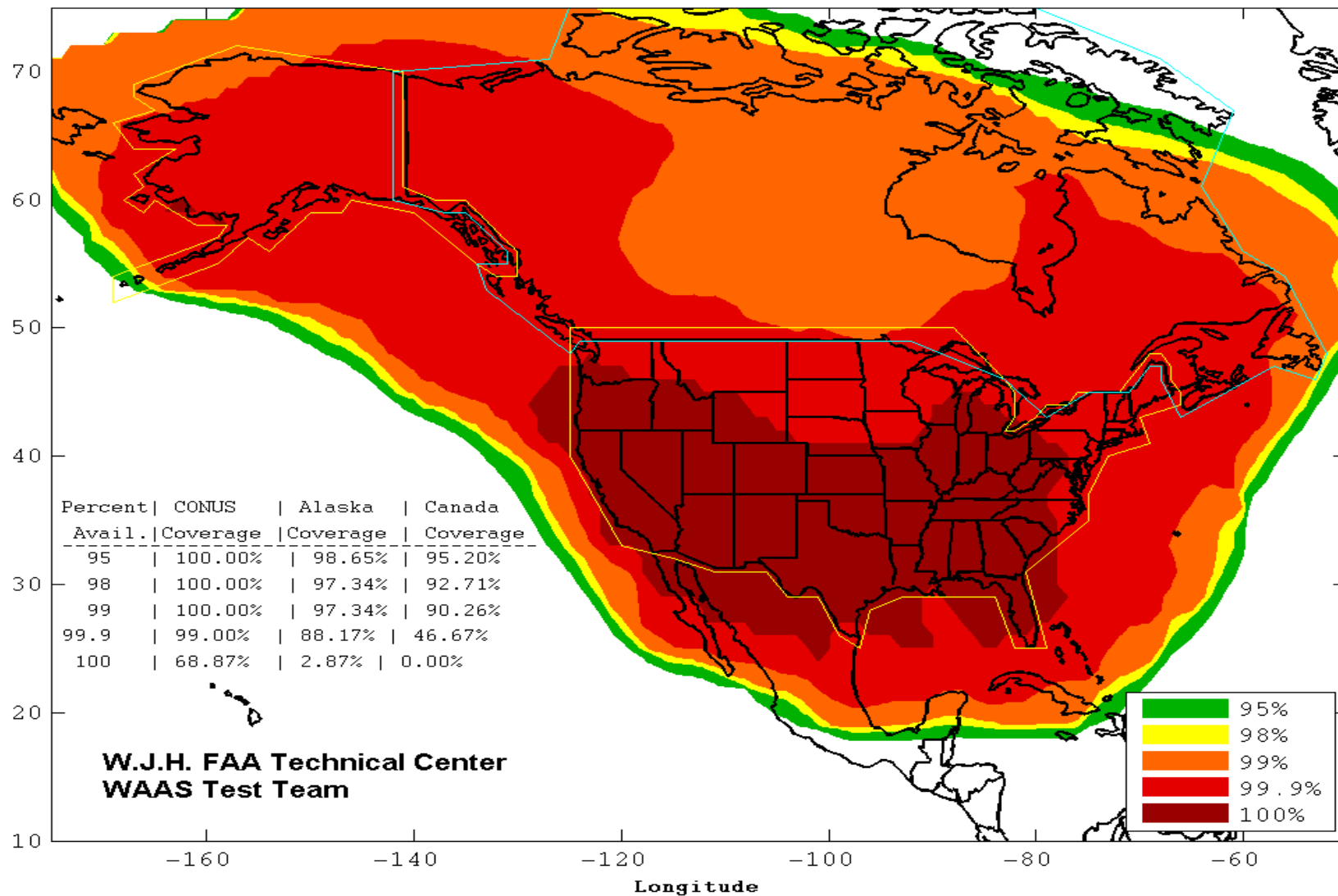


Figure 4-3 LPV 200 North America Coverage for the Quarter

**WAAS LPV200 Coverage Contours
April 1 – June 30, 2014**

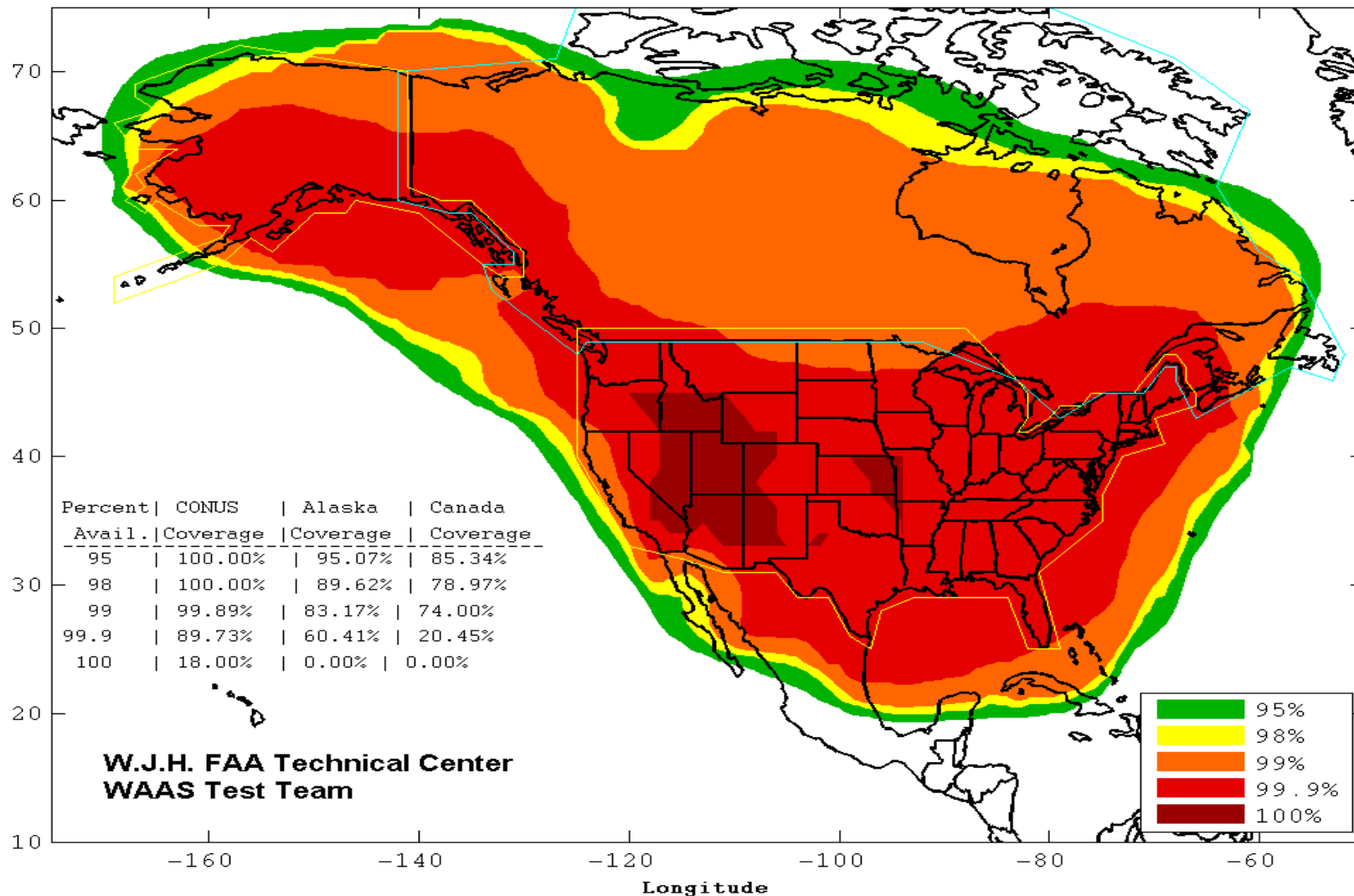


Figure 4-4 RNP 0.1 Coverage for the Quarter
WAAS RNP 0.1 Coverage Contours
April 1 – June 30, 2014

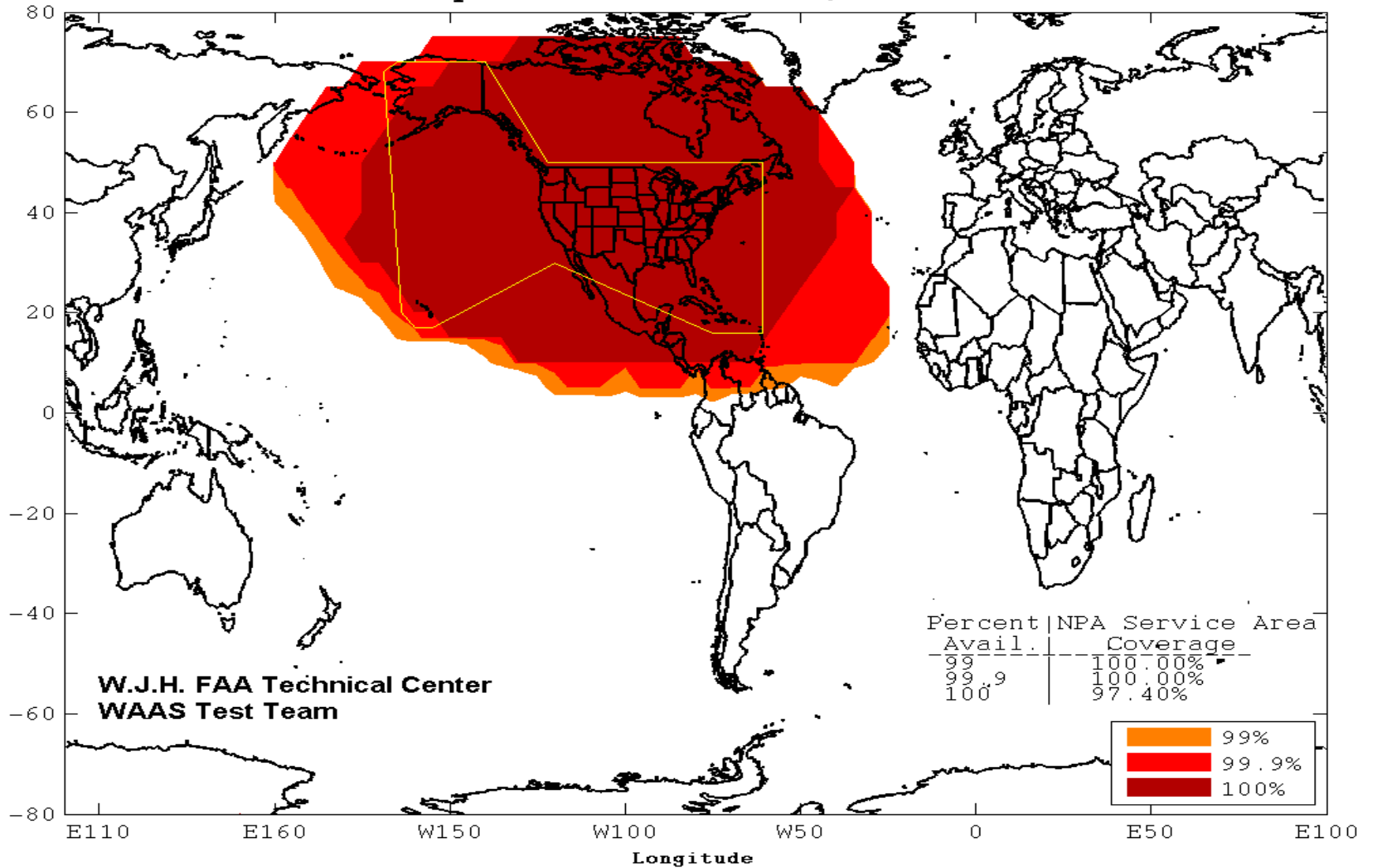


Figure 4-5 RNP 0.3 Coverage for the Quarter

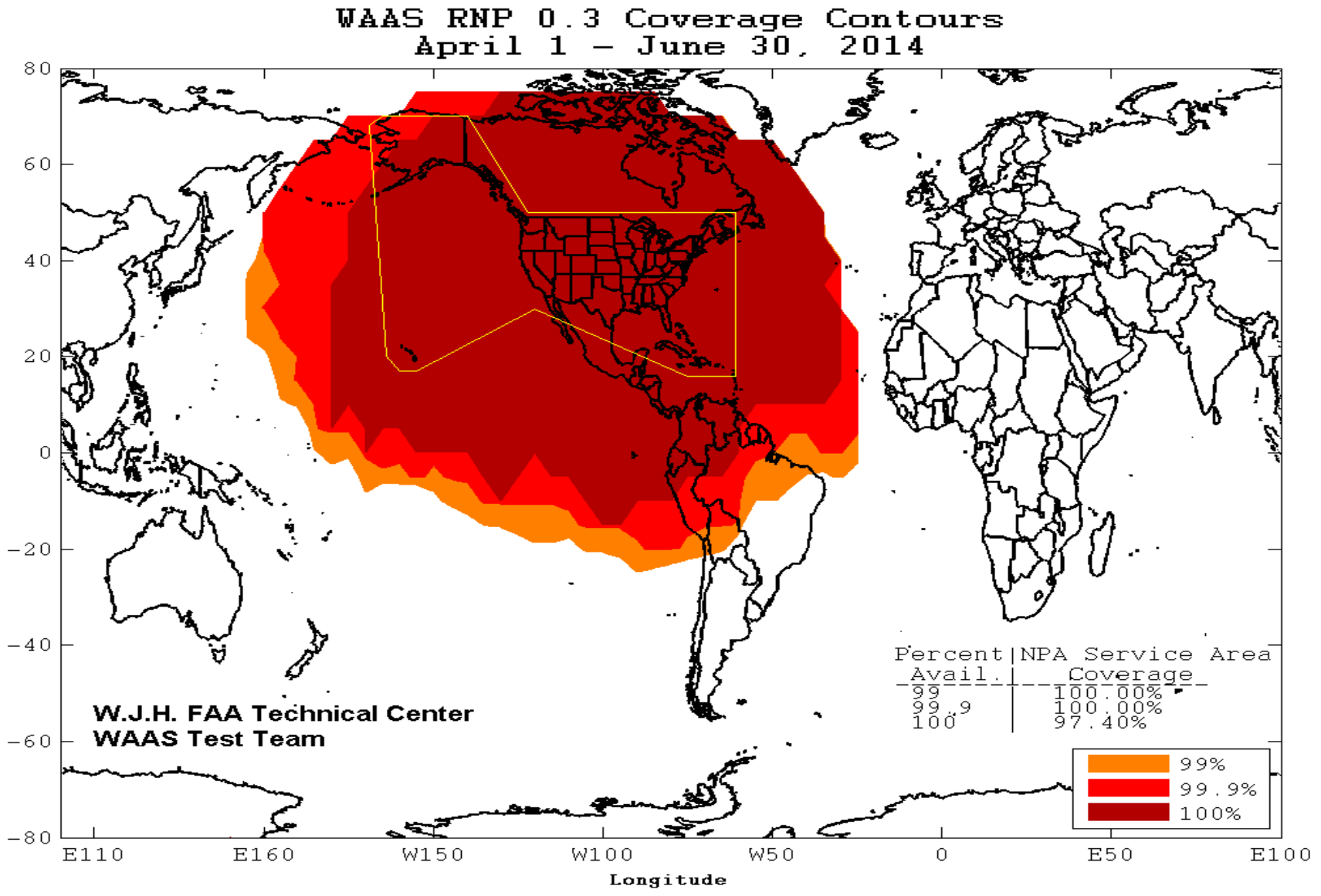


Figure 4-6 Daily LPV and LPV 200 CONUS Coverage

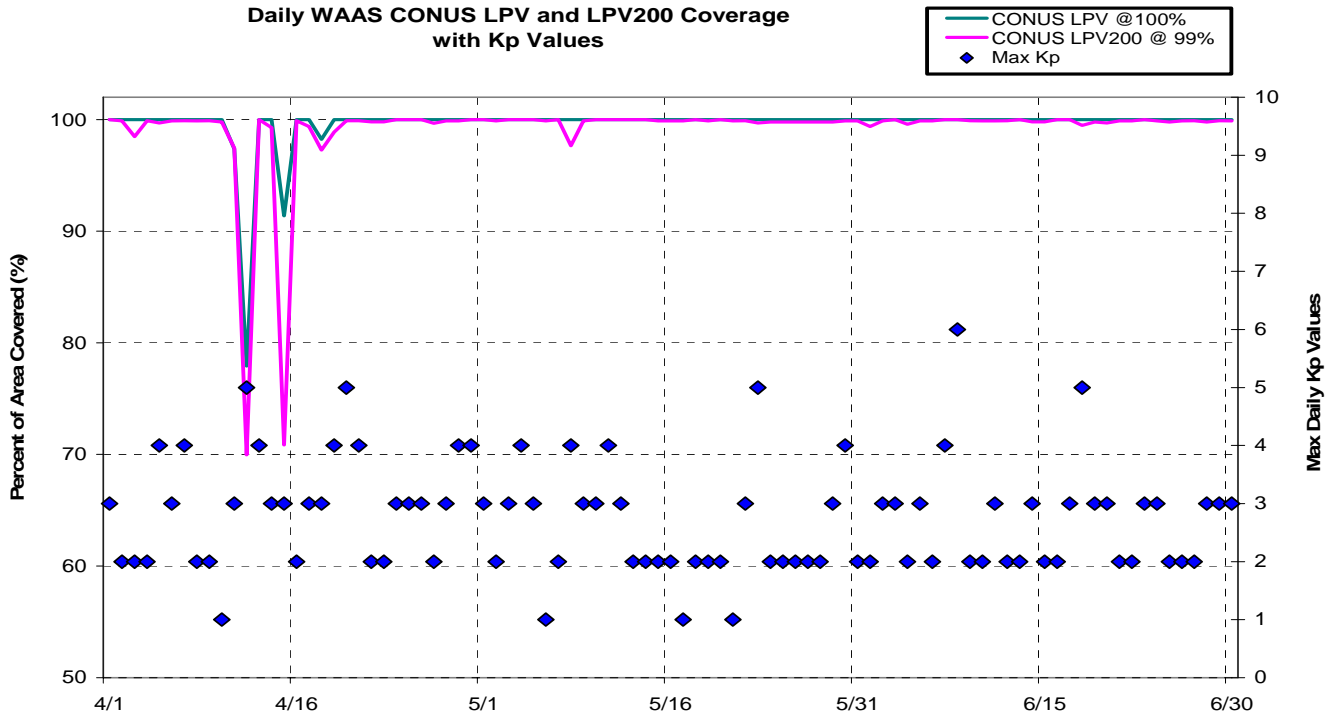


Figure 4-7 Daily LPV and LPV 200 Alaska Coverage

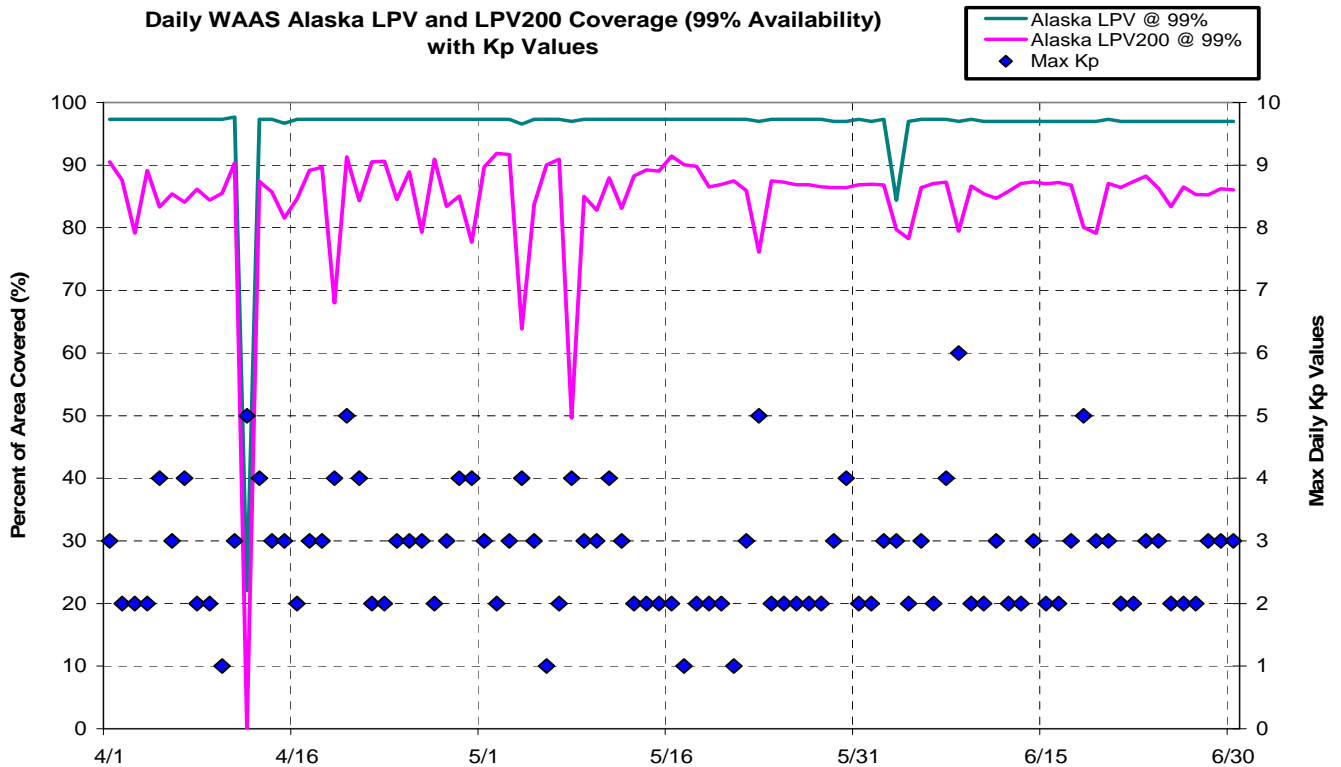


Figure 4-8 Daily LPV and LPV 200 Canada Coverage

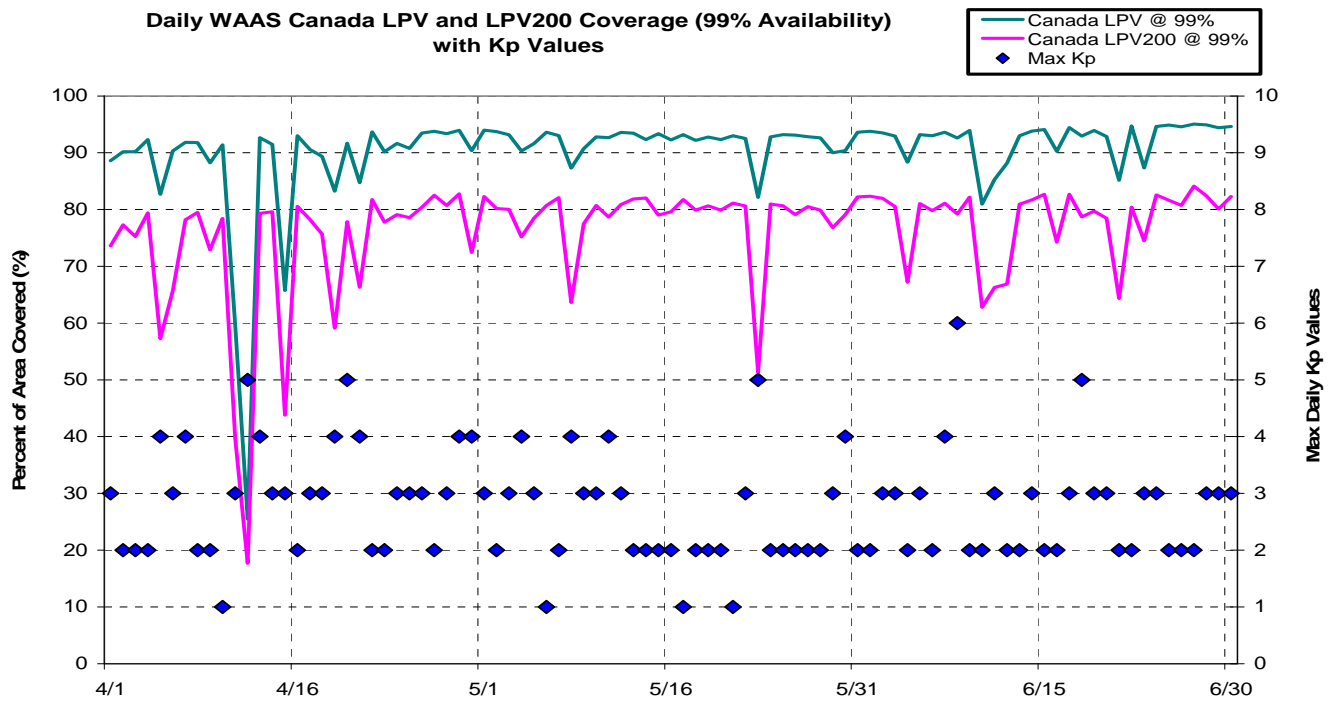
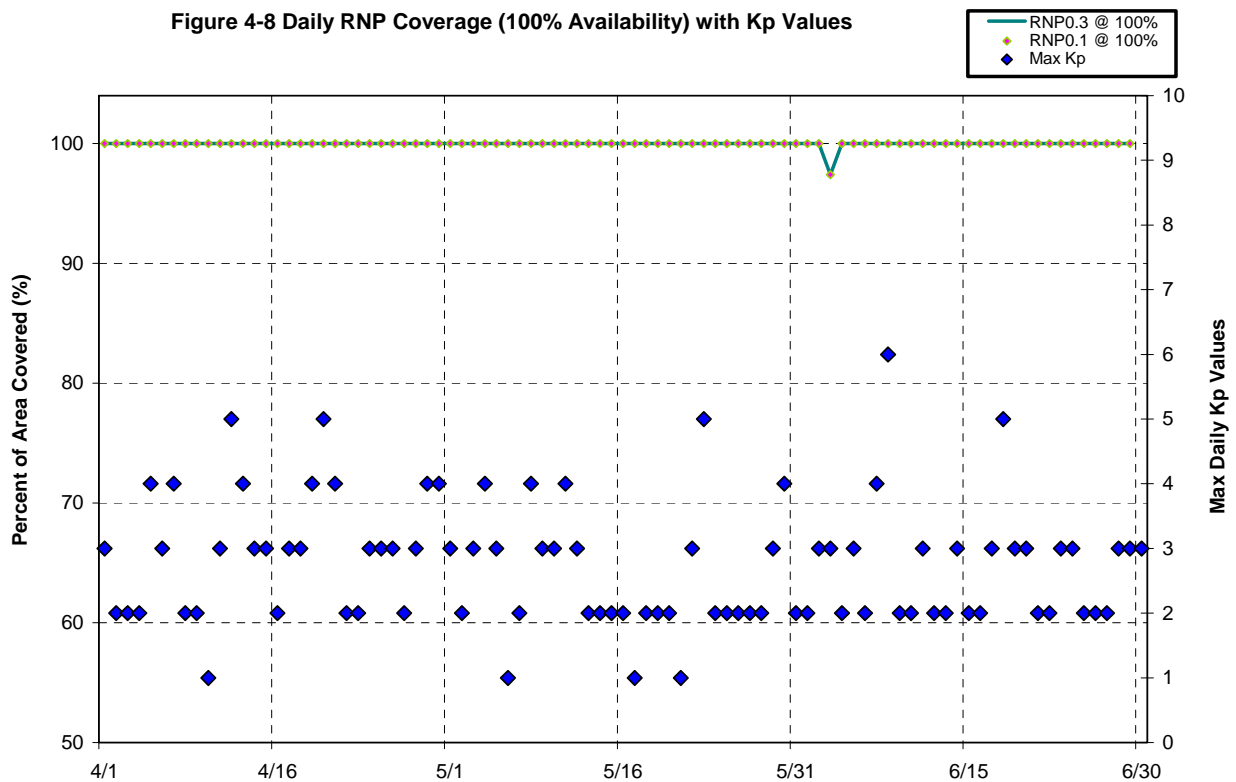


Figure 4-9 Daily RNP Coverage



5.0 **INTEGRITY**

5.1 **HMI Analysis**

Analysis of integrity includes the identification and evaluation of HMI (hazardously misleading information), as well as the generation of a safety index to illustrate the margin of safety that WAAS protection levels are providing. The safety index is a metric that shows how well the protection levels are bounding the maximum observed error when LPV service is available. The process for determining this index involves dividing the protection limit observed by the maximum observed error. An observed safety index of greater than one indicates safe bounding of the greatest observed error, less than one indicates that the maximum error was not bounded, and a result equal to one means that the error was equal to the protection level. An HMI occurs if the position error exceeds the protection level in the vertical or horizontal dimensions at any time and 6.2 seconds or more passes before this event is corrected by WAAS.

Table 5-1 lists the safety index and the number of HMI events. For this evaluation period, the lowest safety margin index is 3.98 at Chicago. There was no HMI event. Since WAAS was made available to the public in August 2000 there has not been an HMI event. WAAS was commissioned by the FAA for safety of life services in July 2003.

Table 5-1 Minimum Safety Margin Index and HMI Statistics

Location	Safety Index		Number of HMIs
	Horizontal	Vertical	
Atlantic City-a	5.06	8.89	0
Grand Forks	7.43	5.60	0
Oklahoma City	4.22	8.29	0
Albuquerque	4.57	7.04	0
Anchorage	8.46	6.42	0
Atlanta	10.63	10.17	0
Barrow	9.23	5.45	0
Bethel	7.42	11.13	0
Billings	4.51	6.50	0
Boston	6.95	12.65	0
Chicago	3.98	5.34	0
Cleveland	4.70	9.53	0
Cold Bay	12.76	11.64	0
Dallas	5.20	6.99	0
Denver	7.88	6.47	0
Fairbanks	8.53	4.25	0
Gander	11.38	9.41	0
Goose Bay	4.57	5.98	0
Houston	11.22	6.48	0
Iqaluit	9.73	7.20	0
Jacksonville	5.18	6.21	0
Juneau	7.07	4.73	0
Kansas City	6.25	9.13	0
Kotzebue	9.18	7.52	0
Los Angeles	8.13	6.23	0
Memphis	9.48	9.48	0
Merida	6.47	8.87	0
Mexico City	10.62	4.86	0
Miami	5.21	5.44	0
Minneapolis	4.78	7.22	0
New York	4.96	14.36	0
Oakland	6.93	8.29	0
Puerto Vallarta	14.75	9.46	0
Salt Lake City	5.51	6.71	0
San Jose Del Cabo	6.95	6.08	0
Seattle	6.50	8.22	0
Washington DC	4.24	8.54	0
Winnipeg	10.72	4.11	0

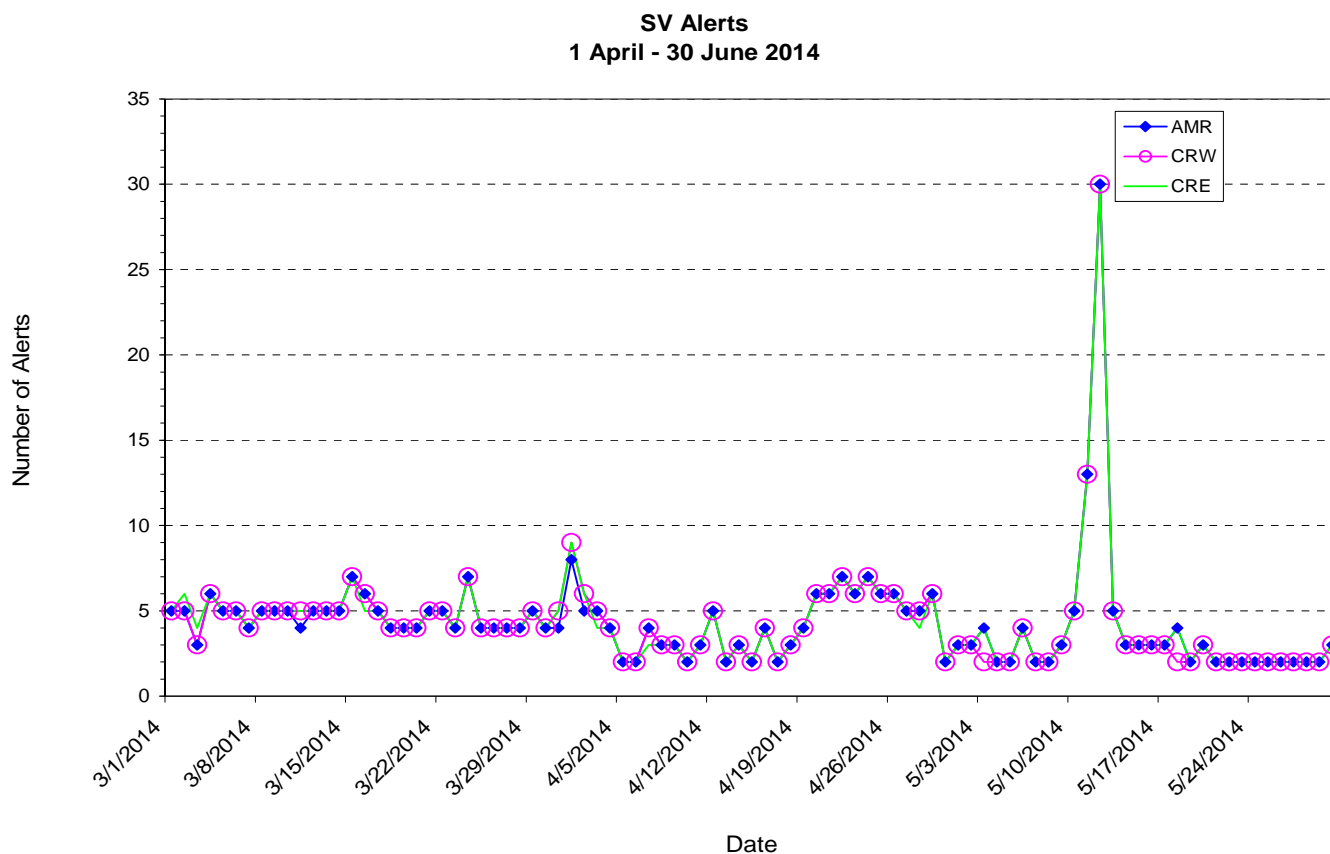
5.2 Broadcast Alerts

The WAAS transmits alert messages to protect the users if the active WAAS corrections are no longer bound by the UDREs. Alerts increase the User Differential Range Error (UDRE) for one or more PRNs, which can reduce the weighting of the satellite in the navigation solution, or completely exclude the satellite from the navigation solution. An increase in UDRE's after an alert effectively increases the user protection levels (HPL and VPL), which affects the availability. Additionally, if an alert message sequence lasts for more than 12 seconds, WAAS fast corrections can time out, causing a loss of continuity. Table 5-2 shows the total number of alerts and the average number of alerts per day. Figure 5-1 shows the number of SV alerts that occurred daily during the reporting period. Often the number of alerts on one GEO is the same as the number of alerts on the other GEO. Therefore, lines tend to overlap in most points on this plot.

Table 5-2 WAAS SV Alert

Message Type	Number of Alerts			Average Alerts Per Day		
	AMR	CRW	CRE	AMR	CRW	CRE
2	225	225	225	2.4725	2.4725	2.4725
3	17	17	17	0.1868	0.1868	0.1868
4	153	153	155	1.6813	1.6813	1.7033
5	0	0	0	0.0000	0.0000	0.0000
6	0	0	0	0.0000	0.0000	0.0000
24	0	0	0	0.0000	0.0000	0.0000
26	0	0	0	0.0000	0.0000	0.0000
Total Alerts	395	395	397	4.3407	4.3407	4.3626
Days in Service	91	91	91			

Figure 5-1 SV Daily Alert Trend



5.3 Availability of WAAS Messages (CRE, CRW, and AMR)

For an accurate and current user position to be calculated, the content of the WAAS message must be broadcast and received within precise time specifications. This aspect of the WAAS is critical to maintaining continuity requirements. Each message type in the WAAS SIS has a specific timeout interval and an expected worst case broadcast interval. Table 5-3 lists the maximum intervals at which each message must broadcast to meet system requirements.

GUS switchovers or broadcast WAAS alerts can interrupt the normal broadcast message stream. If these events occur at a time when the maximum interval of a specific message is approaching, that message may be delayed, resulting in its late transmittal.

Late messages statistics reported during the quarter were mainly caused by GEO SIS outages, GUS switchovers and SV alerts except message type 7 and 10. Occasionally, message type 7 and 10 were late and they were not caused by GEO SIS outages, GUS switchovers or SV alerts. The lateness of type 7 and type 10 messages has little or no impact on user performance and safety.

Tables 5-4 to 5-8 show fast correction, long correction, ephemeris covariance, ionosphere correction, and ionospheric mask message rates statistics broadcasted on AMR GEO. Table 5-9 to 5-13 show message rates statistics broadcasted on CRW GEO. Table 5-14 to 5-18 show message rates statistics on CRE GEO.

Table 5-3 Update Rates for WAAS Messages

Data	Associated Message Types	Maximum Update Interval (seconds)	En Route, Terminal, NPA Timeout (seconds)	Precision Approach Timeout (seconds)
WAAS in Test Mode	0	6	N/A	N/A
PRN Mask	1	60	None	None
UDREI	2-6, 24	6	18	12
Fast Corrections	2-5, 24	See Table A-8 in RTCA DO-229C	See Table A-8 in RTCA DO-229C	See Table A-8 in RTCA DO-229C
Long Term Corrections	24, 25	120	360	240
GEO Nav. Data	9	120	360	240
Fast Correction Degradation	7	120	360	240
Weighting Factors	8	120	240	240
Degradation Parameters	10	120	360	240
Ionospheric Grid Mask	18	300	None	None
Ionospheric Corrections	26	300	600	600
UTC Timing Data	12	300	None	None
Almanac Data	17	300	None	None

Table 5-4 WAAS Fast Correction and Degradation Message Rates – AMR

Message Type	On Time	Late	Max Late Length (seconds)
1	105313	2	203
2	1310796	151	18
3	1310177	132	18
4	1310577	167	18
7	98668	15	195
9	92073	1	160
10	98595	12	228
17	31233	1	517

Table 5-5 WAAS Long Correction Message Rates (Type 24 and 25) – AMR

SV	On Time	Late	Max Late Length (seconds)
1	49045	3	179
2	46920	0	0
3	47598	4	334
4	46853	0	0
5	47507	1	166
6	9928	0	0
7	46845	4	265
8	47330	4	277
9	24701	4	181
10	48269	0	0
11	49421	2	247
12	47199	0	0
13	46770	2	167
14	46917	0	0
15	47954	4	257
16	47314	0	0
17	46822	2	254
18	46392	5	334
19	48358	4	186
20	48277	1	166
21	47116	0	0
22	46767	4	265
23	46570	0	0
24	48908	4	181
25	48394	0	0
26	48025	2	247
27	48956	3	180
28	47665	4	180
29	46810	0	0
30	16030	0	0
31	47382	0	0
32	46762	0	0

Table 5-6 WAAS Ephemeris Covariance Message Rates (Type 28) – AMR

SV	On Time	Late	Max Late Length (seconds)
1	40285	3	414
2	38523	1	208
3	39027	3	311
4	38478	0	0
5	38944	2	312
6	8158	0	0
7	38435	2	210
8	38929	4	312
9	20296	3	210
10	39662	0	0
11	40632	3	210
12	38747	1	207
13	38416	1	210
14	38510	0	0
15	39346	1	209
16	38860	0	0
17	38484	1	313
18	38066	3	313
19	39686	2	209
20	39634	0	0
21	38681	0	0
22	38434	1	205
23	38224	0	0
24	40206	1	205
25	39742	0	0
26	39391	3	209
27	40223	3	311
28	39154	3	212
29	38454	0	0
30	13168	0	0
31	38874	0	0
32	38375	0	0
133	75108	0	0
135	75378	3	414
138	75450	2	209

Table 5-7 WAAS Ionospheric Correction Message Rates (Type 26) – AMR

Band	Block	On Time	Late	Max Late Length (seconds)
0	0	27228	3	306
0	1	27214	10	576
0	2	27236	5	576
1	0	27230	12	593
1	1	27233	9	307
1	2	27219	7	873
1	3	27232	8	305
1	4	27220	9	576
2	0	27238	7	362
2	1	27223	14	889
2	2	27225	10	579
2	3	27223	13	305
2	4	27213	9	580
3	0	27221	3	306
3	1	27219	11	870
3	2	27243	12	584
9	0	27227	13	576
9	1	27212	12	580
9	2	27213	11	576
9	3	27239	6	306
9	4	27241	6	864
9	5	27222	14	867
9	6	27226	10	576

Table 5-8 WAAS Ionospheric Mask Message Rates (Type 18) – AMR

Band	On Time	Late	Max Late Length (seconds)
0	35596	1	406
1	35628	2	438
2	35605	0	0
3	35605	2	403
9	35601	1	402

Table 5-9 WAAS Fast Correction and Degradation Message Rates – CRW

Message Type	On Time	Late	Max Late Length (seconds)
1	105988	1	5116
2	1310000	129	5058
3	1309390	108	5055
4	1309765	152	5055
7	99062	12	5142
9	92017	1	5112
10	99200	16	5140
17	31305	1	5392

Table 5-10 WAAS Long Correction Message Rates (Type 24 and 25) - CRW

SV	On Time	Late	Max Late Length (seconds)
1	49065	1	167
2	46922	0	0
3	47554	0	0
4	46864	0	0
5	47478	1	123
6	9933	0	0
7	46833	0	0
8	47285	0	0
9	24723	0	0
10	48267	0	0
11	49393	0	0
12	47204	0	0
13	46778	0	0
14	46858	0	0
15	47911	0	0
16	47266	0	0
17	46853	0	0
18	46336	0	0
19	48327	0	0
20	48294	1	166
21	47060	0	0
22	46725	0	0
23	46572	0	0
24	48859	0	0
25	48399	0	0
26	47953	0	0
27	48903	0	0
28	47635	0	0
29	46759	0	0
30	15969	0	0
31	47382	0	0
32	46773	0	0

Table 5-11 WAAS Ephemeris Covariance Message Rates (Type 28) – CRW

SV	On Time	Late	Max Late Length (seconds)
1	40302	0	0
2	38525	0	0
3	38991	0	0
4	38481	0	0
5	38925	0	0
6	8158	0	0
7	38418	0	0
8	38896	0	0
9	20309	0	0
10	39661	0	0
11	40614	0	0
12	38748	1	209
13	38423	0	0
14	38464	0	0
15	39310	0	0
16	38821	0	0
17	38500	0	0
18	38029	1	208
19	39651	0	0
20	39638	0	0
21	38636	0	0
22	38395	0	0
23	38223	1	208
24	40161	0	0
25	39743	0	0
26	39357	0	0
27	40185	0	0
28	39115	0	0
29	38411	0	0
30	13121	0	0
31	38876	0	0
32	38375	1	209
133	75244	1	7655
135	75396	1	11800
138	75413	0	0

Table 5-12 WAAS Ionospheric Correction Message Rates (Type 26) – CRW

Band	Block	On Time	Late	Max Late Length (seconds)
0	0	27218	6	5205
0	1	27214	8	5189
0	2	27210	8	5199
1	0	27202	12	5195
1	1	27215	10	5194
1	2	27225	8	5194
1	3	27216	9	5199
1	4	27196	8	5475
2	0	27222	6	5482
2	1	27214	10	5481
2	2	27212	7	5482
2	3	27217	7	5482
2	4	27207	9	5475
3	0	27201	7	5481
3	1	27210	10	5475
3	2	27217	15	5472
9	0	27215	5	5477
9	1	27207	10	5206
9	2	27211	6	5200
9	3	27205	8	5200
9	4	27227	10	5199
9	5	27206	6	5206
9	6	27210	8	5199

Table 5-13 WAAS Ionospheric Mask Message Rates (Type 18) – CRW

Band	On Time	Late	Max Late Length (seconds)
0	35663	1	5283
1	35636	1	5230
2	35619	1	5302
3	35655	1	5206
9	35612	1	5392

Table 5-14 WAAS Fast Correction and Degradation Message Rates – CRE

Message Type	On Time	Late	Max Late Length (seconds)
1	105949	1	121
2	1310848	129	12
3	1310241	105	12
4	1310618	151	12
7	99043	15	139
9	92078	1	175
10	99150	26	138
17	31319	2	312

Table 5-15 WAAS Long Correction Message Rates (Type 24 and 25) – CRE

SV	On Time	Late	Max Late Length (seconds)
1	49062	0	0
2	46926	0	0
3	47616	0	0
4	46866	0	0
5	47521	1	123
6	9938	0	0
7	46867	0	0
8	47347	1	166
9	24723	0	0
10	48268	0	0
11	49436	0	0
12	47209	0	0
13	46782	0	0
14	46918	0	0
15	47961	1	166
16	47316	0	0
17	46855	0	0
18	46392	0	0
19	48374	0	0
20	48277	0	0
21	47115	0	0
22	46775	0	0
23	46575	0	0
24	48913	1	166
25	48399	0	0
26	48023	0	0
27	48968	0	0
28	47691	0	0
29	46817	0	0
30	16029	0	0
31	47388	0	0
32	46771	0	0

Table 5-16 WAAS Ephemeris Covariance Message Rates (Type 28) – CRE

SV	On Time	Late	Max Late Length (seconds)
1	40302	0	0
2	38541	0	0
3	39057	2	207
4	38477	0	0
5	38963	0	0
6	8159	0	0
7	38454	0	0
8	38952	0	0
9	20297	1	208
10	39674	0	0
11	40642	1	208
12	38735	0	0
13	38408	0	0
14	38543	0	0
15	39362	0	0
16	38850	0	0
17	38504	0	0
18	38070	0	0
19	39702	0	0
20	39630	0	0
21	38670	0	0
22	38443	1	207
23	38237	0	0
24	40209	0	0
25	39747	0	0
26	39432	0	0
27	40231	0	0
28	39132	0	0
29	38456	0	0
30	13166	0	0
31	38882	0	0
32	38358	0	0
133	75117	0	0
135	75340	0	0
138	75530	0	0

Table 5-17 WAAS Ionospheric Correction Message Rates (Type 26) – CRE

Band	Block	On Time	Late	Max Late Length (seconds)
0	0	27230	9	306
0	1	27225	11	311
0	2	27226	10	305
1	0	27232	8	307
1	1	27234	10	310
1	2	27229	15	306
1	3	27227	9	307
1	4	27246	10	306
2	0	27220	8	306
2	1	27237	11	310
2	2	27226	13	579
2	3	27226	10	306
2	4	27218	10	306
3	0	27251	9	305
3	1	27220	12	306
3	2	27225	11	306
9	0	27232	12	306
9	1	27221	11	311
9	2	27239	10	306
9	3	27228	8	306
9	4	27222	11	311
9	5	27240	9	315
9	6	27228	8	308

Table 5-18 WAAS Ionospheric Mask Message Rates (Type 18) – CRE

Band	On Time	Late	Max Late Length (seconds)
0	35697	0	0
1	35658	0	0
2	35674	0	0
3	35692	0	0
9	35684	0	0

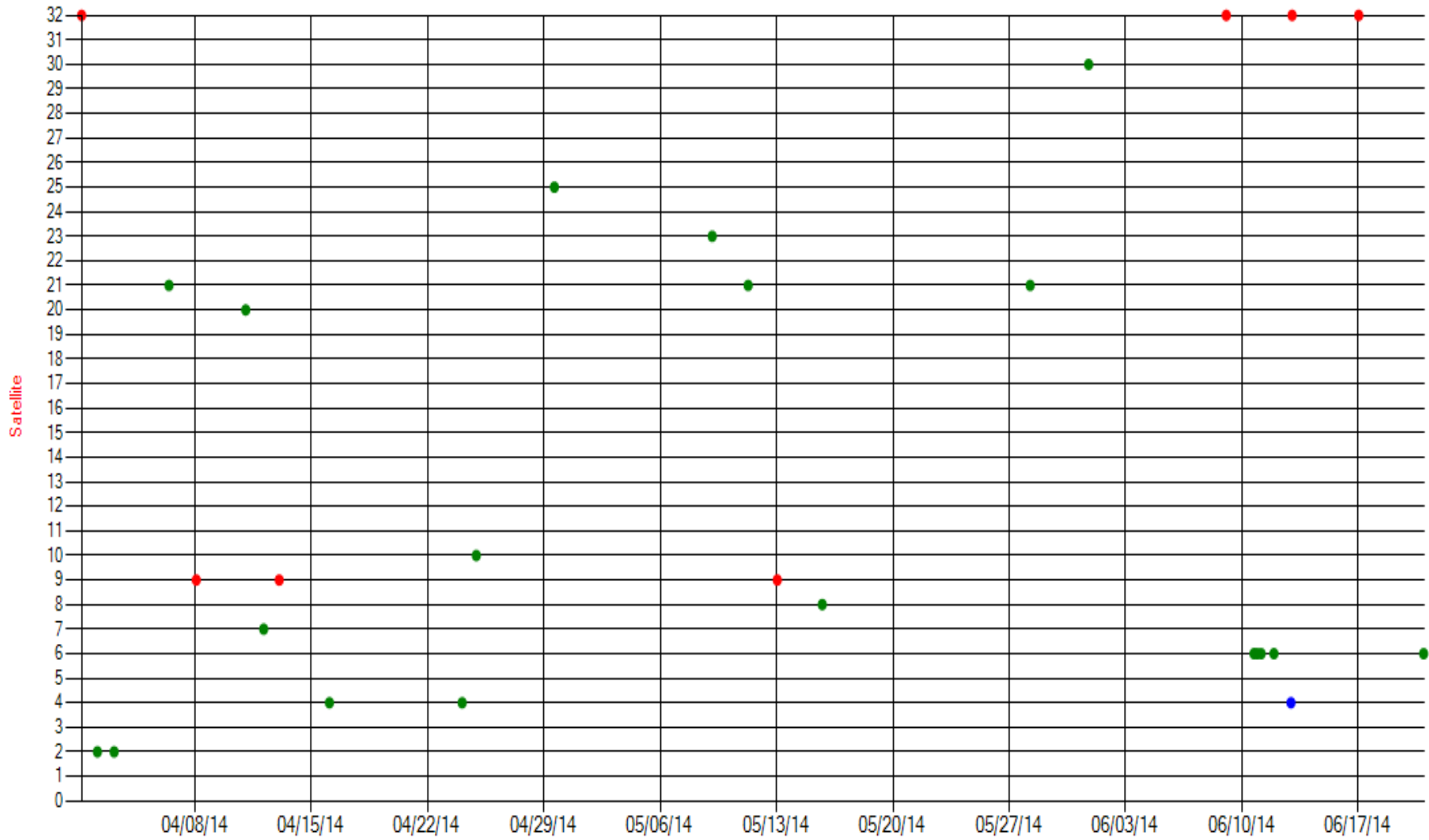
5.4 Satellite Glitches

The GPS satellites occasionally have periods of signal carrier stability ‘glitches’ of varying magnitude. These are short degradations in the signal that in severe cases cause WAAS to lose track or cycle slip for some or all of the WAAS receivers. The more severe glitches will cause the WAAS reported UDRE spike to ‘Not Monitor’ and result in an alert.

Figure 5-2 shows the satellite glitches visible to WAAS for the quarter. Glitches are categorized into three severity levels. Severity one glitches cause a significant number of the receivers to simultaneously have bad subframe parity, but not all receivers. Severity two glitches cause all of the receivers to report bad subframe parity data and some receivers to also have cycle slips and or lose tracking of L2 and or L1. Severity three glitches cause all of the receivers to lose track of both L1 and L2 data. Note, the tool that performs this Satellite Glitch Analysis reports times when more than 14 GPS satellites are in view for some of the WAAS reference stations. The NovAtel WAAS G2 receiver is only capable of tracking 14 GPS satellites at a given time. GPS users may also experience this condition.

Figure 5-2 SV Glitch Trend

Satellite Glitch Events
Severity: Green = 1; Blue = 2; Red = 3



6.0 SV RANGE ACCURACY

Range accuracy evaluation computes the probability that the WAAS User Differential Range Error (UDRE) and Grid Ionospheric Vertical Error (GIVE) statistically bound 99.9% of the range residuals for each satellite tracked by the receiver. A UDRE is broadcast by the WAAS for each satellite that is monitored by the system and the 99.9% bound (3.29 sigma) of the residual error on a pseudorange after application of fast and long-term corrections is checked. The pseudorange residual error is determined by taking the difference between the raw pseudorange and a calculated reference range. The reference range is equal to the true range between the corrected satellite position and surveyed user antenna plus all corrections (WAAS Fast Clock, WAAS Long-Term Clock, WAAS Ionospheric delay, Tropospheric delay, Receiver Clock Bias, and Multipath). Since the true ionospheric delay and multipath error are not precisely known, the estimated variance in these error sources are added to the UDRE before the comparing it to the residual error.

GPS satellite range residual errors were calculated for twelve WAAS receivers during the quarter. Table 6-1 and 6-2 show the range error 95% index and 99.9% (3.29 sigma) bounding statistics for each SV at the selected locations. Figures 6-1 to 6-2 show the range error for each SV as measured by the WAAS receivers at the Washington DC reference station.

A GIVE is broadcast by the WAAS for each IGP that is monitored by the system and the 99.9% (3.29 sigma) bound of the ionospheric error is checked. The WAAS broadcasts the ionospheric model using IGP's at predefined geographic locations. Each IGP contains the vertical ionospheric delay and the error in that delay in the form of the GIVE. The ionospheric error is determined by taking the difference between the WAAS vertical ionospheric delay interpolated from the IGP's and GPS dual frequency measurement at that GPS satellite.

GPS satellite ionospheric errors were calculated for twelve WAAS receivers during the quarter. Table 6-3 and 6-4 show the ionospheric error 95% index and 99.9% (3.29 sigma) bounding statistics for each SV at the selected locations. Figures 6-3 to 6-4 show the ionospheric error for each SV as measured by the WAAS receiver at the Washington DC reference station.

For this reporting period, most satellites range errors were bounded 99.9% of the time by UDRE. The unbounded errors were due to geomagnetic activity and noise and multipath.

Table 6-1 Range Error 95% index and 3.29 Sigma Bounding

Site → SV ↓	Billings		Albuquerque		Boston		Washington DC		Houston		Kansas City	
	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)
1	2.888	100	3.231	99.9972	3.059	100	2.759	100	3.033	100	2.939	100
2	1.996	100	2.550	100	2.152	100	2.299	100	3.590	99.7995	2.179	100
3	1.506	100	1.164	100	1.294	100	1.029	100	1.243	100	1.408	100
4	1.949	100	1.205	100	1.539	100	1.316	100	1.275	100	2.221	100
5	1.881	100	1.664	100	1.899	100	1.396	100	1.137	100	1.932	100
6	4.041	99.9990	2.510	100	3.026	100	2.692	100	2.824	100	2.895	99.9955
7	1.240	100	1.116	100	1.680	100	1.324	100	1.063	100	1.430	100
8	1.191	100	1.049	100	1.655	100	1.241	100	1.266	100	1.168	100
9	2.120	100	1.631	100	1.505	100	1.814	100	1.530	100	1.745	100
10	1.405	100	1.129	100	1.118	100	1.263	100	1.966	100	1.177	100
11	0.825	100	0.957	100	1.401	100	1.683	100	1.746	100	1.326	100
12	1.599	100	1.195	100	1.573	100	1.174	100	1.375	100	1.310	100
13	1.372	100	1.573	100	1.282	100	1.340	100	1.326	100	1.565	100
14	1.974	100	0.683	100	1.163	100	0.859	100	1.718	100	0.739	100
15	1.373	100	1.419	100	1.831	100	1.371	100	1.493	100	1.410	100
16	1.123	100	1.077	100	1.223	100	1.050	100	1.312	100	1.523	100
17	2.212	100	0.843	100	1.722	100	0.919	100	1.406	100	1.258	100
18	0.966	100	1.389	100	0.970	100	1.291	100	1.871	100	1.143	100
19	2.602	100	1.969	100	2.704	100	2.562	100	2.922	100	2.339	100
20	0.903	100	1.399	100	1.248	100	1.345	100	1.460	100	1.045	100
21	1.139	100	1.569	100	1.306	100	1.944	99.9906	2.014	100	1.686	100
22	2.066	100	2.266	100	2.088	100	2.452	100	2.610	100	1.981	100
23	1.488	100	1.608	100	1.611	100	1.721	100	2.240	100	1.278	100
24	3.069	99.9970	2.689	100	3.088	99.9985	2.730	99.9999	3.099	99.9998	2.950	100
25	3.187	99.9304	2.655	100	2.669	100	2.447	100	3.073	100	2.772	100
26	1.596	100	0.939	100	1.742	100	1.185	100	1.188	100	1.489	100
27	2.619	100	2.021	100	2.457	100	2.217	100	2.206	100	2.407	100
28	1.642	100	1.394	100	1.427	100	1.388	100	1.749	100	1.312	100
29	2.176	100	1.747	100	1.433	100	1.705	100	1.264	100	1.512	100
30	2.098	100	2.176	100	2.747	100	2.375	100	1.865	100	2.451	100
31	2.186	100	0.999	100	1.085	100	1.050	100	1.128	100	1.385	100
32	0.976	100	1.113	100	1.039	100	1.048	100	1.158	100	1.259	100
135	1.958	100	1.974	100	3.143	100	1.681	100	2.251	100	1.550	100
138	1.496	100	1.275	100	1.382	100	1.527	100	1.598	100	2.027	100

Table 6-2 Range Error 95% index and 3.29 Sigma Bounding

Site → SV ↓	Los Angeles		Salt Lake City		Miami		Minneapolis		Atlanta		Juneau	
	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)
1	2.655	99.9467	3.150	99.9990	2.972	100	3.005	100	2.824	100	3.021	100
2	2.607	100	2.169	100	2.722	100	1.832	100	2.244	100	1.562	100
3	1.335	100	1.707	100	0.941	100	1.512	100	1.134	100	1.742	100
4	1.518	100	1.659	100	2.039	100	1.756	100	1.336	100	1.853	100
5	1.197	100	1.659	100	1.233	100	1.848	100	1.263	100	1.876	100
6	3.002	100	3.447	100	3.506	100	3.159	99.3358	2.621	100	3.579	100
7	0.978	100	1.822	100	1.234	100	1.519	100	1.037	100	1.848	100
8	0.980	100	1.090	100	1.003	100	1.258	100	0.833	100	1.566	100
9	1.379	100	2.556	100	1.399	100	1.367	100	1.129	100	1.954	100
10	1.171	100	0.938	100	1.404	100	0.869	100	0.958	100	1.091	100
11	1.696	100	1.427	100	1.438	100	1.075	100	1.429	100	1.117	100
12	0.974	100	1.231	100	1.349	100	1.497	100	1.064	100	1.489	100
13	0.925	100	1.775	100	1.454	100	1.524	100	1.044	100	1.517	100
14	1.292	100	0.931	100	1.402	100	0.817	100	0.715	100	0.965	100
15	0.997	100	1.345	100	1.354	100	1.760	100	1.241	100	1.734	100
16	1.670	100	1.062	100	1.255	100	1.292	100	1.080	100	0.982	100
17	0.873	100	1.249	100	1.285	100	1.298	100	0.943	100	1.306	100
18	1.664	100	1.308	100	1.041	100	0.978	100	1.276	100	0.957	100
19	2.537	100	2.095	100	2.403	100	1.770	100	2.480	100	2.139	100
20	1.398	100	1.445	100	1.449	100	0.965	100	1.200	100	0.873	100
21	1.764	100	1.091	100	2.090	100	0.832	100	1.359	100	0.995	100
22	2.582	100	2.100	100	2.315	100	1.838	100	2.166	100	2.139	100
23	2.167	100	1.807	100	1.984	100	1.321	100	1.722	100	1.331	100
24	2.405	100	3.708	99.1320	2.688	100	2.942	100	2.716	100	3.129	99.8956
25	2.320	100	2.349	100	2.563	100	2.582	100	2.425	100	2.962	99.9891
26	1.120	100	1.250	100	1.007	100	1.728	100	1.121	100	1.548	100
27	2.042	100	2.307	100	2.168	100	2.858	100	2.252	100	2.533	100
28	1.628	100	1.107	100	2.169	100	0.891	100	1.299	100	1.053	100
29	1.058	100	2.090	100	1.795	100	1.808	100	1.200	100	2.077	100
30	1.663	100	2.092	100	2.144	100	2.544	100	1.972	100	2.805	100
31	1.304	100	1.327	100	1.706	100	1.218	100	0.864	100	1.616	100
32	0.992	100	1.779	100	1.623	100	1.323	100	0.800	100	1.115	100
135	1.671	100	1.798	100	1.459	100	2.175	100	1.895	100	1.437	100
138	2.713	100	1.765	100	2.161	100	1.855	100	1.429	100	1.579	100

Table 6-3 Ionospheric Error 95% index and 3.29 Sigma Bounding

Site → SV ↓	Billings		Albuquerque		Boston		Washington DC		Houston		Kansas City	
	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)
1	1.816	100	1.937	100	2.357	100	2.025	100	1.997	100	2.010	100
2	1.440	100	1.477	100	1.568	100	1.527	100	1.714	100	1.469	100
3	0.681	100	0.667	100	0.699	100	0.684	100	0.785	100	0.701	100
4	1.223	100	1.263	100	1.030	100	1.220	100	1.411	100	1.810	100
5	1.164	100	1.101	100	1.249	100	0.818	100	1.259	100	1.258	100
6	3.228	100	2.434	100	2.236	100	2.450	100	2.798	100	2.423	100
7	0.770	100	0.668	100	0.768	100	0.799	100	0.684	100	0.665	100
8	0.610	100	0.564	100	0.772	100	0.551	100	0.493	100	0.614	100
9	1.131	100	0.910	100	0.907	100	0.855	100	0.622	100	0.912	100
10	0.461	100	0.365	100	0.592	100	0.431	100	1.000	100	0.453	100
11	0.428	100	0.411	100	0.446	100	0.453	100	0.733	100	0.387	100
12	0.778	100	0.889	100	0.822	100	0.647	100	0.589	100	0.639	100
13	0.654	100	0.971	100	0.633	100	0.666	100	0.837	100	0.652	100
14	1.470	100	0.648	100	0.487	100	0.380	100	0.785	100	0.434	100
15	0.539	100	0.680	100	0.978	100	0.847	100	1.239	100	0.778	100
16	0.631	100	0.547	100	0.538	100	0.585	100	0.702	100	0.736	100
17	1.826	100	0.962	100	1.255	100	0.645	100	0.703	100	0.688	100
18	0.722	100	0.593	100	0.683	100	0.763	100	0.824	100	0.608	100
19	1.316	100	1.108	100	1.498	100	1.520	100	1.852	100	1.527	100
20	0.536	100	0.735	100	0.456	100	0.580	100	0.631	100	0.452	100
21	0.870	100	0.876	100	0.946	100	1.207	100	1.033	100	0.943	100
22	1.838	100	1.506	100	1.731	100	1.878	100	1.775	100	1.531	100
23	1.263	100	1.196	100	1.317	100	1.343	100	1.495	100	1.030	100
24	1.800	100	1.799	100	1.907	100	1.680	100	1.887	100	1.759	100
25	1.778	100	1.803	100	1.542	100	1.407	100	1.561	100	1.552	100
26	0.767	100	0.646	100	0.910	100	0.635	100	0.784	100	0.722	100
27	1.345	100	1.277	100	1.547	100	1.353	100	1.396	100	1.433	100
28	1.047	100	0.569	100	0.800	100	0.597	100	0.627	100	0.568	100
29	1.149	100	1.174	100	0.891	100	0.924	100	0.818	100	0.886	100
30	1.437	100	1.673	100	1.633	100	1.525	100	1.479	100	1.710	100
31	1.297	100	0.652	100	0.547	100	0.707	100	0.749	100	0.692	100
32	0.347	100	0.774	100	0.435	100	0.464	100	0.687	100	0.592	100

Table 6-4 Ionospheric Error 95% index and 3.29 Sigma Bounding

Site → SV ↓	Los Angeles		Salt Lake City		Miami		Minneapolis		Atlanta		Juneau	
	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)
1	1.990	100	1.873	100	2.196	100	2.072	100	2.025	100	2.198	100
2	1.454	100	1.424	100	1.449	100	1.386	100	1.522	100	1.290	100
3	0.704	100	0.694	100	0.889	100	0.779	100	0.651	100	0.856	100
4	1.095	100	1.186	100	1.837	100	1.138	100	0.866	100	1.287	100
5	0.948	100	1.057	100	1.202	100	1.012	100	0.826	100	1.161	100
6	2.291	100	2.806	100	2.972	100	2.568	100	2.223	100	2.735	100
7	0.729	100	0.959	100	0.791	100	0.706	100	0.536	100	1.089	100
8	0.553	100	0.560	100	0.675	100	0.527	100	0.370	100	0.850	100
9	0.746	100	1.096	100	0.869	100	0.690	100	0.475	100	1.131	100
10	0.502	100	0.361	100	0.443	100	0.363	100	0.476	100	0.549	100
11	0.762	100	0.449	100	0.665	100	0.396	100	0.570	100	0.506	100
12	0.604	100	0.753	100	0.800	100	0.804	100	0.619	100	0.796	100
13	0.503	100	0.874	100	0.880	100	0.708	100	0.462	100	0.906	100
14	0.511	100	0.618	100	0.708	100	0.432	100	0.455	100	0.581	100
15	0.686	100	0.695	100	1.027	100	0.941	100	0.723	100	1.131	100
16	0.809	100	0.552	100	0.729	100	0.521	100	0.645	100	0.531	100
17	0.840	100	0.941	100	0.845	100	0.848	100	0.577	100	0.935	100
18	0.802	100	0.862	100	0.560	100	0.676	100	0.918	100	0.792	100
19	1.628	100	1.195	100	1.513	100	1.263	100	1.620	100	1.444	100
20	0.548	100	0.534	100	0.615	100	0.539	100	0.676	100	0.443	100
21	0.683	100	0.657	100	1.152	100	0.679	100	0.972	100	0.739	100
22	1.563	100	1.492	100	1.582	100	1.619	100	1.800	100	1.462	100
23	1.168	100	1.278	100	1.380	100	1.140	100	1.415	100	0.988	100
24	1.975	100	2.071	100	2.019	100	1.914	100	1.730	100	2.271	100
25	1.635	100	1.669	100	1.604	100	1.646	100	1.353	100	1.961	100
26	0.818	100	0.664	100	0.803	100	0.929	100	0.616	100	0.954	100
27	1.565	100	1.289	100	1.590	100	1.756	100	1.365	100	1.671	100
28	0.654	100	0.482	100	1.187	100	0.417	100	0.724	100	0.565	100
29	0.862	100	1.066	100	1.093	100	0.938	100	0.678	100	1.147	100
30	1.401	100	1.674	100	1.834	100	1.666	100	1.298	100	1.957	100
31	0.704	100	0.705	100	0.846	100	0.499	100	0.414	100	0.949	100
32	0.466	100	0.999	100	0.923	100	0.604	100	0.404	100	0.658	100

Figure 6-1 95% Range Error (PRN 1 – PRN 16) – Washington DC

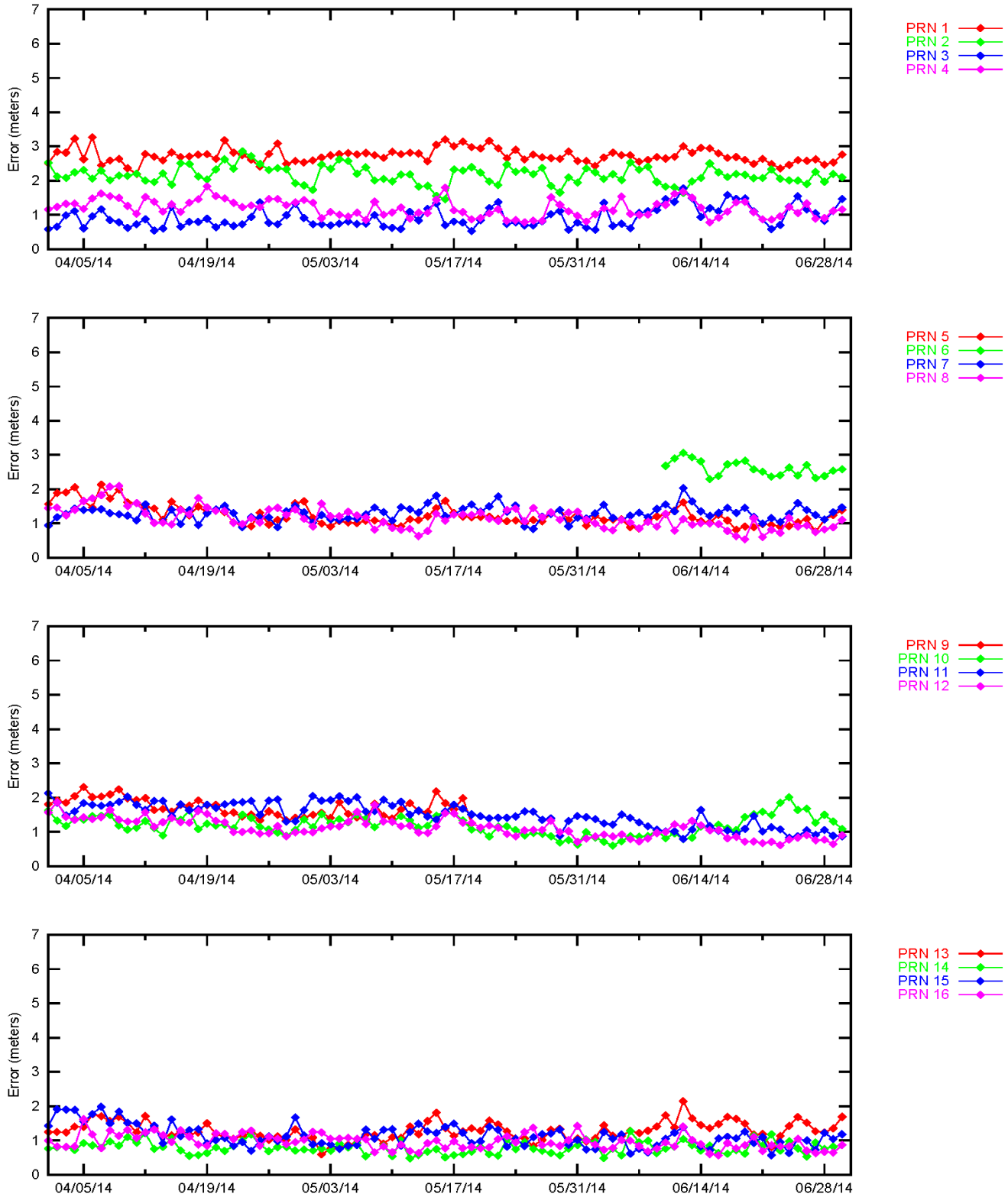


Figure 6-2 95% Range Error (PRN 17 – PRN 32) – Washington DC

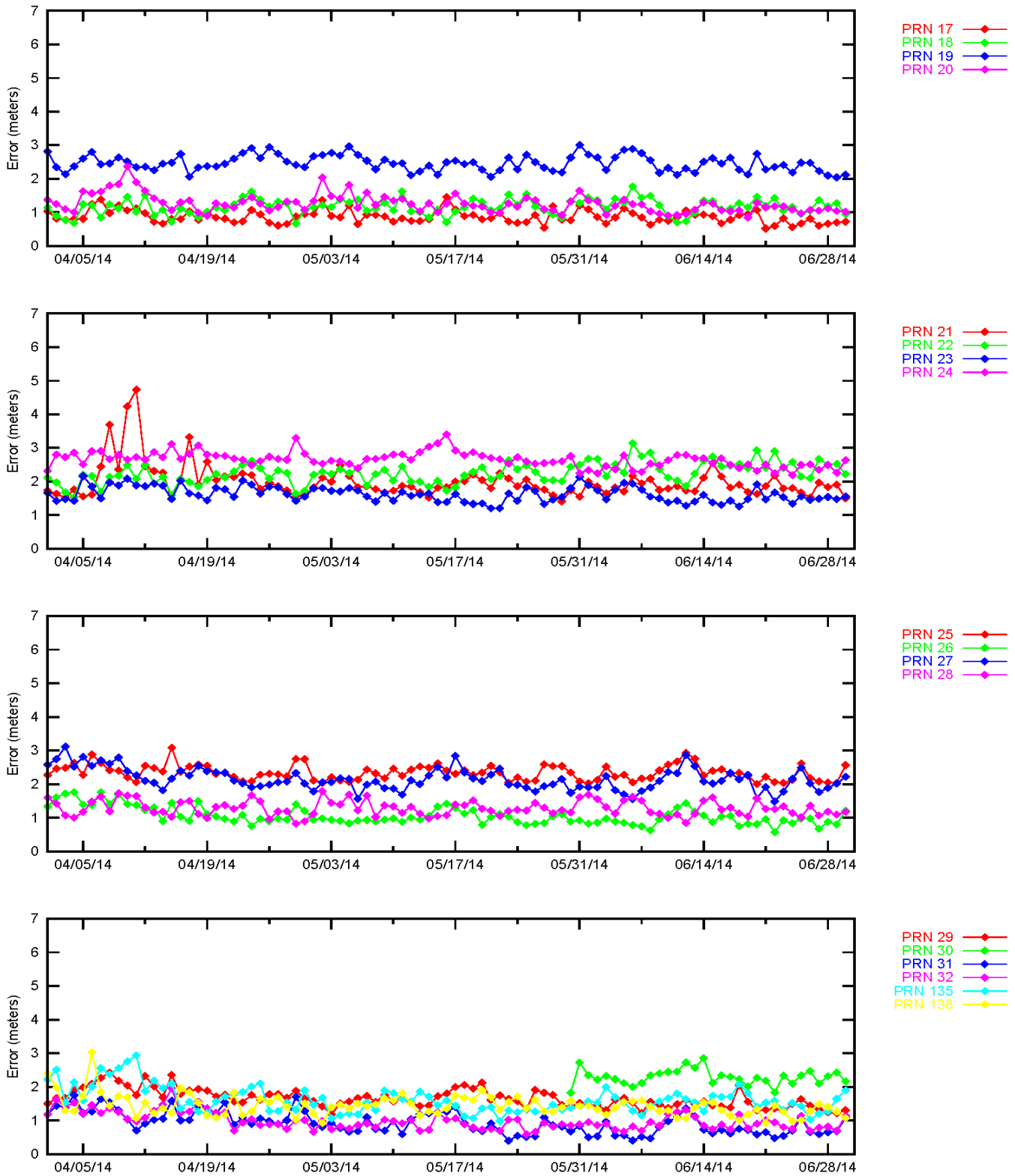


Figure 6-3 95% Ionospheric Error (PRN 1 – PRN 16) – Washington DC

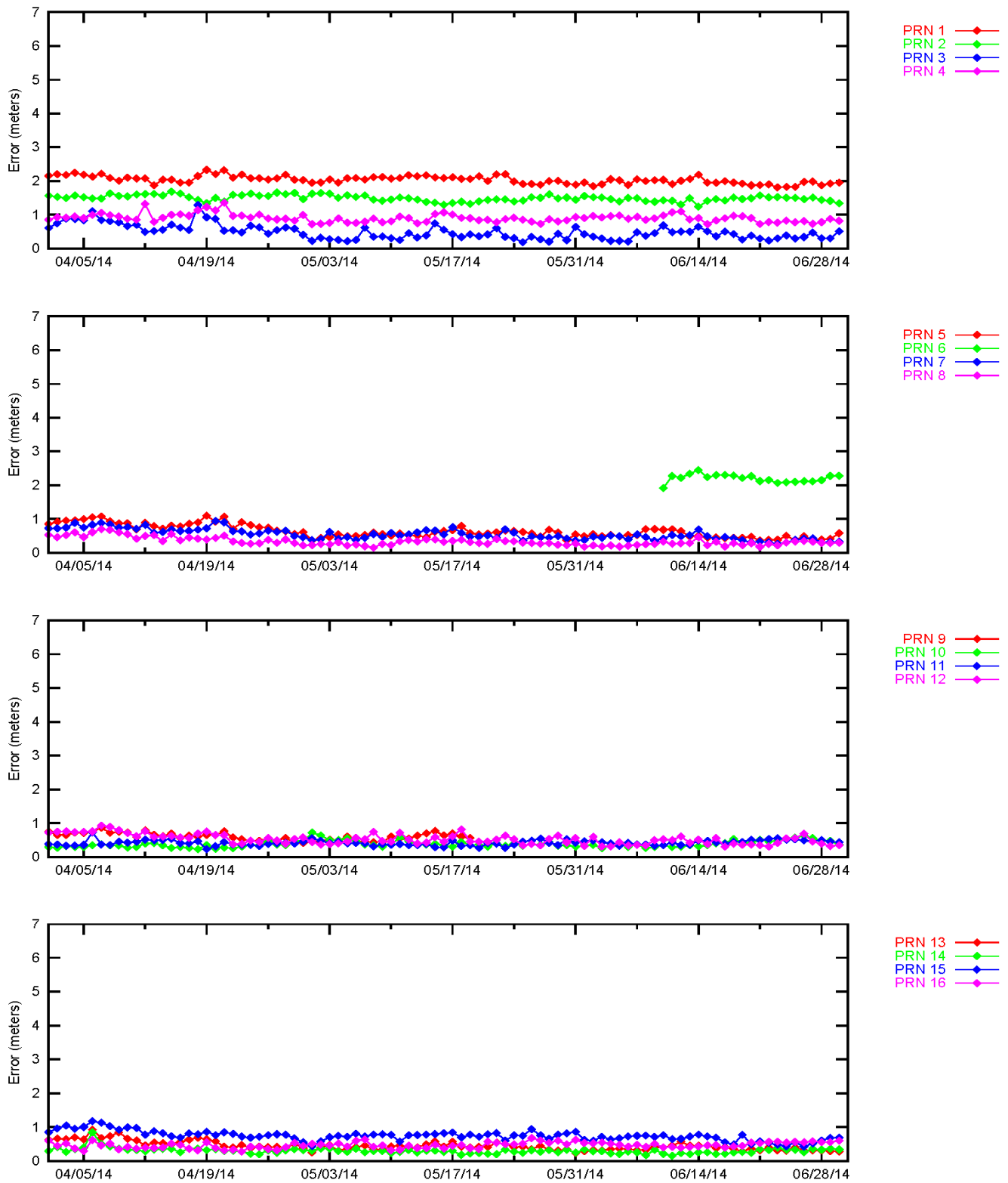
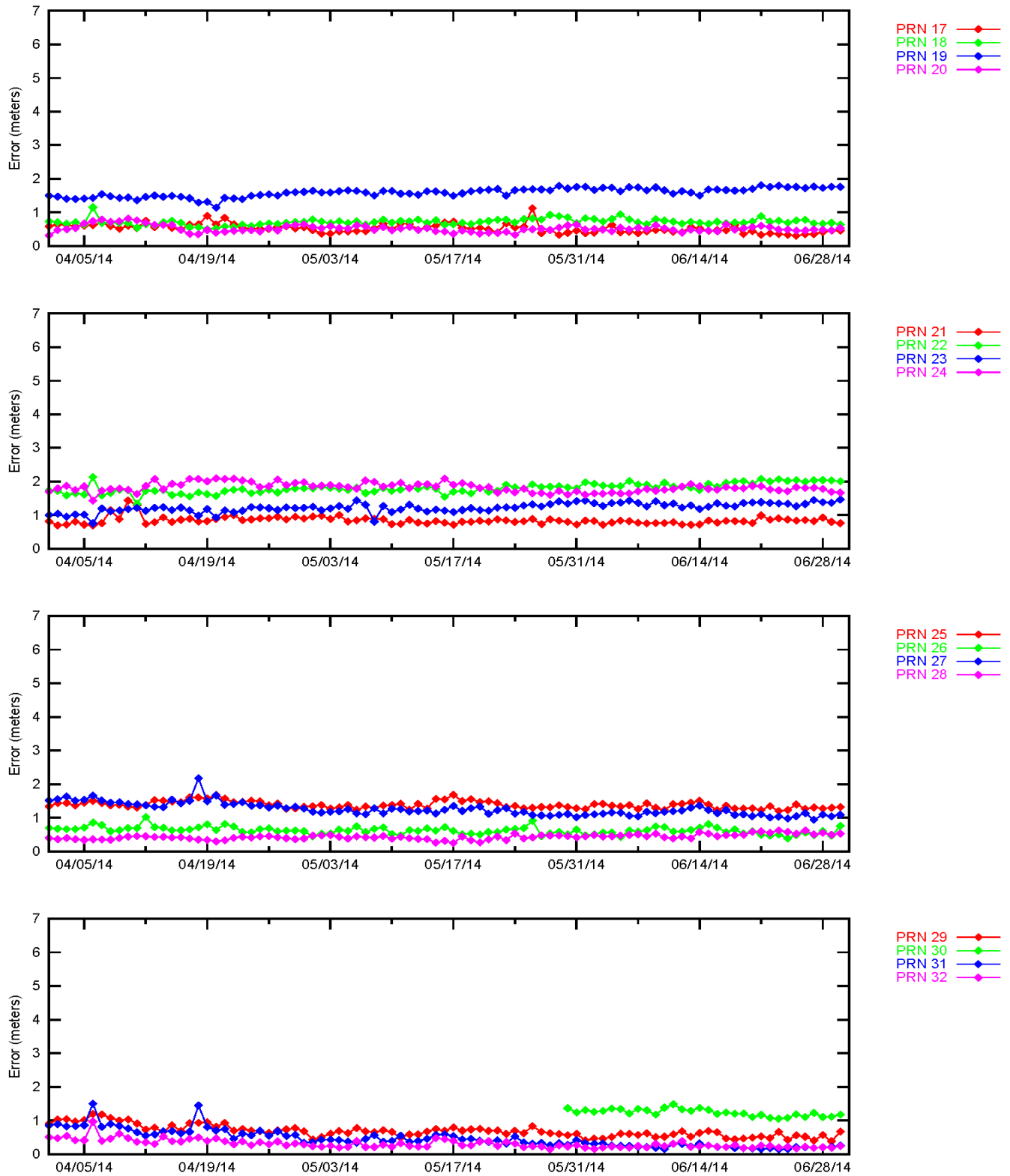


Figure 6-4 95% Ionospheric Error (PRN 17 - PRN 32) – Washington DC



7.0 GEO RANGING PERFORMANCE

The WAAS GEO navigation messages provide corrections and UDRE values for each satellite. The GEO ranging availability from each GEO navigation message source was evaluated separately to determine the quality of service provided.

Table 7-1 shows the GEO-Ranging performance. Figure 7-1 shows the trend of CRW GEO PA Ranging Availability. Figure 7-2 shows the trend of CRE GEO PA Ranging Availability. Figure 7-3 shows the trend of AMR GEO NPA Ranging Availability.

The decreases in AMR NPA ranging availability in Figure 7-3 on April 12 were due to a GUS switchover and SV alert on AMR GEO. AMR NPA availability decrease on June 3 was due to a SIS outage. Please refer to Table 1.5 for all events that affected GEO ranging availability.

Table 7-1 GEO Ranging Availability

GEO Source	GEO	PA (%)	NPA (%)	Not Monitored (%)	Do Not Use (%)
AMR 133	CRW	99.06	0.59	0.31	0.00
AMR 133	CRE	99.21	0.58	0.18	0.00
AMR 133	AMR	0	99.37	0.17	0.43
CRW 135	CRW	99.07	0.59	0.25	0.00
CRW 135	CRE	99.15	0.58	0.18	0.00
CRW 135	AMR	0	99.55	0.17	0.19
CRE 138	CRW	99.07	0.59	0.31	0.00
CRE 138	CRE	99.22	0.58	0.18	0.00
CRE 138	AMR	0	99.37	0.17	0.43

Figure 7-1 Daily PA CRW GEO Ranging Availability Trend

**CRW PA-Ranging Performance reported by AMR, CRW, and CRE
1 April - 30 June 2014**

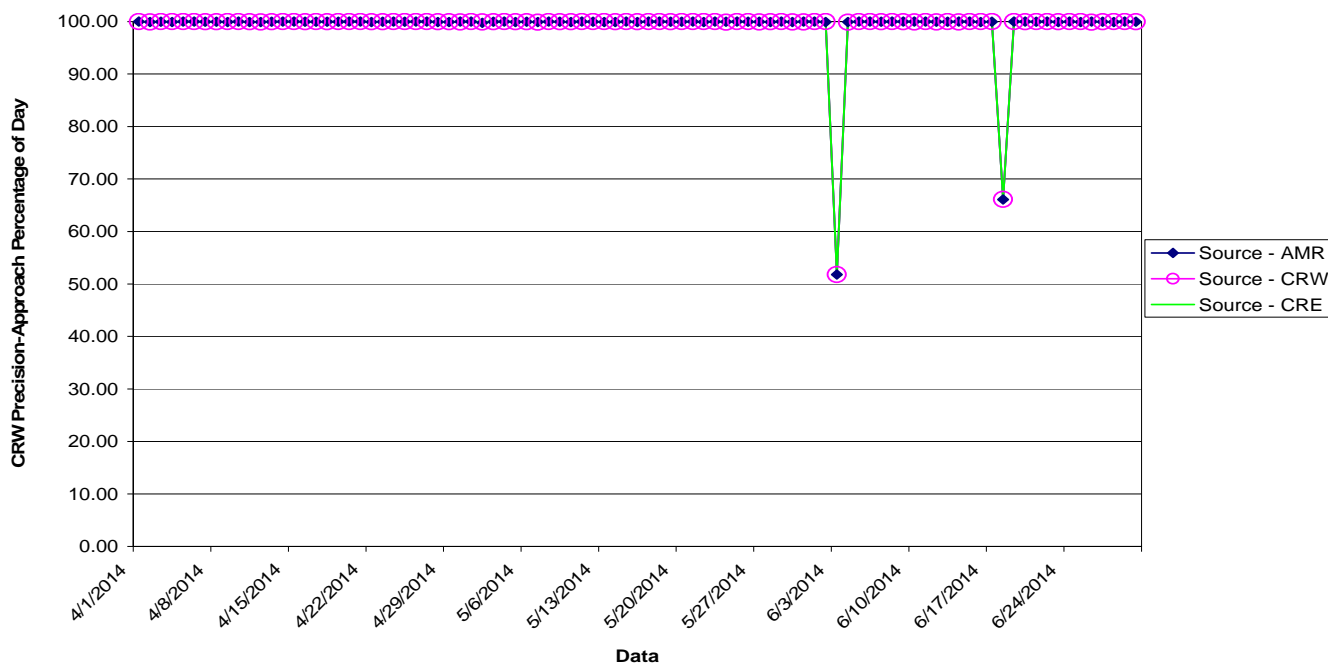


Figure 7-2 Daily PA CRE GEO Ranging Availability Trend

**CRE PA-Ranging Performance reported by AMR, CRW, and CRE
1 April - 30 June 2014**

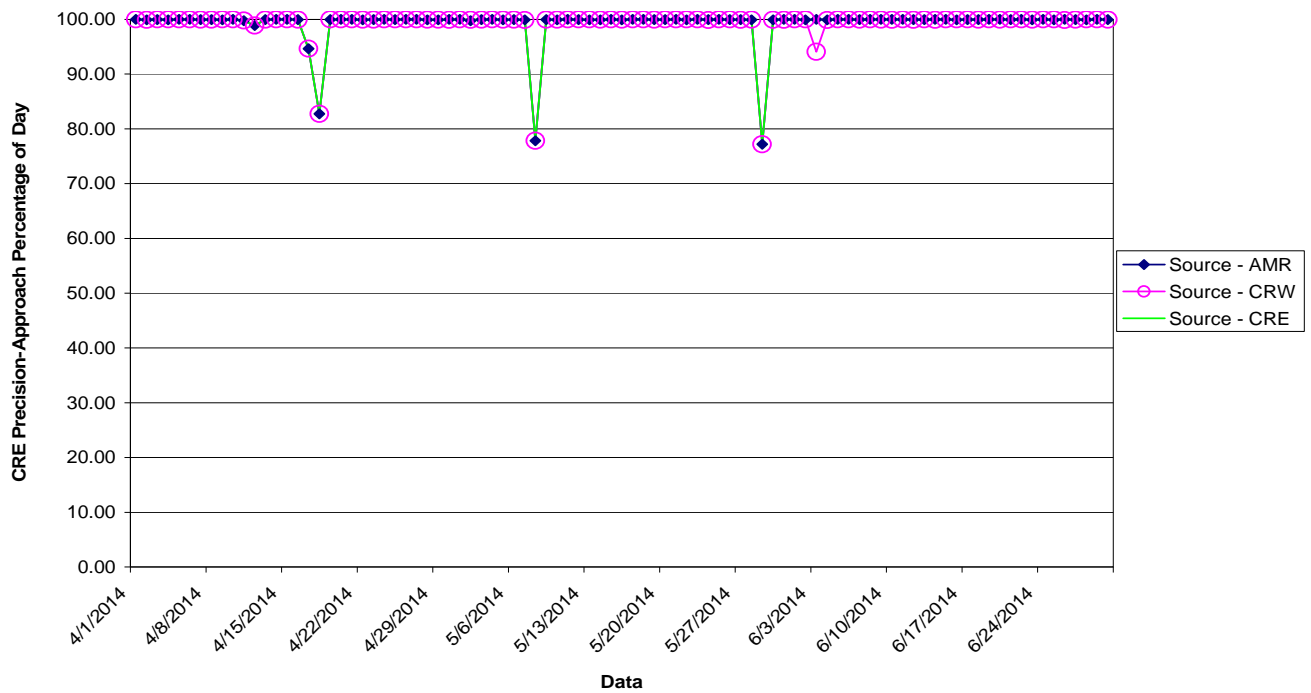
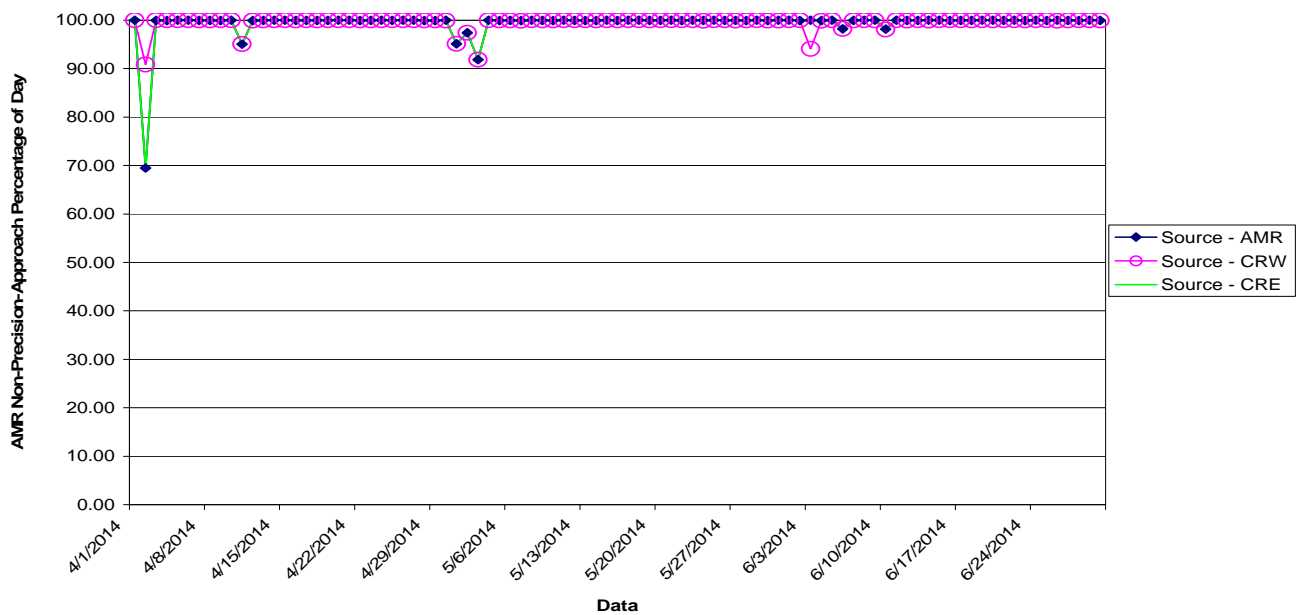


Figure 7-3 Daily NPA AMR GEO Ranging Availability Trend

**AMR NPA-Ranging Performance reported by AMR, CRW, and CRE
1 April - 30 June 2013**



8.0 WAAS AIRPORT AVAILABILITY

The WAAS airport availability evaluation determines the number and length LPV service outages at selected airports from the transmitted WAAS navigation message. The navigation messages transmitted from all GEO satellites are processed simultaneously, and WAAS protection levels (VPL and HPL) are computed at each airport once every 30 second in accordance with the RTCA DO-229D. Once the protection levels have been produced at each airport an LPV service evaluation is conducted to identify outages in service (i.e. when protection levels exceed alert limits). WAAS LPV service is available for a user when the vertical protection level (VPL) is less than or equal to vertical alert limit (VAL) of 50 meters and the horizontal protection level (HPL) is less than or equal to horizontal alert limit (HAL) of 40 meters. If both conditions are met at a specified airport location then WAAS LPV service is available at that airport. If either one of the conditions are not met at a specified airport location then WAAS LPV service at that airport is unavailable and an outage in LPV service is recorded with its duration. When the LPV service becomes unavailable it is not considered available again until protection levels are below or equal to alert limits for at least 15 minutes. Although this will reduce LPV service availability minimally, it substantially reduces the number of service outages and prevents excessive switching in and out of service availability. Similar service analysis is completed for LP and LPV 200 services in accordance with HAL and VAL shown in Table 1-1. The number of WAAS LPV service outages and the availability at selected airports in the US and Canada for this evaluation period of WAAS operation is presented in Table 8-1. Figures 8-1 to 8-6 provide the graphical representation of the LP, LPV and LPV 200 availability and outage counts at all airports, including many that do not have published approaches. These results are depicted geographically on an interactive web page at <http://www.nstb.tc.faa.gov/AirportOutages/>.

The interactive web page can be accessed by entering the web address into an Internet browser and selecting the current quarter from the drop-down menu on the upper left corner and clicking “Submit Request”. The WAAS LPV airport layer will appear providing color coded availability results as shown in Figures 8-1 to 8-2. Rolling over any airport with the cursor displays the LPV availability and number of LPV outages for the reporting period. The “WAAS Layer” menu in the upper right of the display allows the user to select WAAS LP or LPV 200 availability and the number of outage results as shown in Figures 8-3 to 8-6. The user can review WAAS availability performance for US airports with GPS RNAV instrument approach procedures by selecting “Show all Airports”, or limit airports displayed to those with approved LPV approaches as provided in Table 8-1.

Table 8-1 WAAS LP, LPV, and LPV200 Outages and Availability

Airport Id	Airport Name	State/Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
CAL4	FORT MACKAY / ALBIAN AERODROME	AB	LPV	2	0.998855	1	0.998722	4	0.998516
CEV3	VEGREVILLE	AB	LPV	1	0.999103	1	0.998775	4	0.998577
CYEG	EDMONTON / JOSEPHBURG	AB	LPV	1	0.999199	1	0.998821	3	0.998562
CYXD	EDMONTON CITY CTR	AB	LPV	1	0.999199	1	0.998821	3	0.998558
2C7	SHAKTOOLIK	AK	LPV	1	0.999977	1	0.999763	6	0.999027
6A8	ALLAKAKET	AK	LP	1	0.999748	1	0.999454	4	0.999103
7KA	TATITLEK	AK	LP	1	0.999691	1	0.999470	1	0.999313
9A3	CHUATHBALUK	AK	LPV	0	1	1	0.999847	4	0.999393
AKN	KING SALMON	AK	LPV	0	1	1	0.999977	4	0.999645
ANC	TED STEVENS ANCHORAGE INTL	AK	LPV200	1	0.999836	1	0.999607	2	0.999397
AQH	QUINHAGAK	AK	LPV	0	1	0	1	9	0.998970
AQT	NUIQSUT	AK	LPV	1	0.999748	2	0.999344	40	0.997283
BET	BETHEL	AK	LPV200	0	1	2	0.999973	7	0.999203

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
BRW	WILEY POST-WILL ROGERS MEM	AK	LPV	2	0.999031	7	0.998371	217	0.973359
CDB	COLD BAY	AK	LPV200	0	1	3	0.999794	418	0.928384
CDV	MERLE K (MUDHOLE) SMITH	AK	LPV	1	0.999679	1	0.999458	1	0.999309
CLP	CLARKS POINT	AK	LPV	0	1	0	1	7	0.999550
CXF	COLDFOOT	AK	LP	1	0.999741	1	0.999393	7	0.998947
D76	ROBERT/BOB/CURTIS MEMORIAL	AK	LPV	2	0.999286	2	0.999004	49	0.994345
DLG	DILLINGHAM	AK	LPV	0	1	0	1	6	0.999561
ELI	ELIM	AK	LPV	1	0.999981	1	0.999748	7	0.998977
ENA	KENAI MUNICIPAL	AK	LPV200	1	0.999901	1	0.999679	2	0.999443
ENM	EMMONAK	AK	LPV	0	1	1	0.999962	8	0.998974
FAI	FAIRBANKS INTL	AK	LPV200	1	0.999683	2	0.999554	2	0.999222
GAL	EDWARD G. PITKA	AK	LPV	1	0.999786	1	0.999561	5	0.999210
GKN	GULKANA	AK	LPV	1	0.999683	1	0.999470	1	0.999302
HLA	HUSLIA	AK	LPV	1	0.999786	1	0.999534	5	0.999203
HOM	HOMER	AK	LPV	0	1	1	0.999771	2	0.999584
HPB	HOOPER BAY	AK	LP	0	1	2	0.999966	27	0.997718
ILI	ILIAMNA	AK	LPV	0	1	1	0.999844	2	0.999550
KAL	KALTAG	AK	LPV	2	0.999908	2	0.999763	5	0.999187
KSM	ST MARY'S	AK	LPV200	0	1	1	0.999966	6	0.999019
KTN	KETCHIKAN INTL	AK	LPV	1	0.999622	1	0.999328	2	0.998897
KWT	KWETHLUK	AK	LPV	0	1	1	0.999973	6	0.999279
KYU	KOYUKUK	AK	LPV	1	0.999786	1	0.999561	5	0.999119
MCG	MCGRATH	AK	LP	1	0.999939	1	0.999676	3	0.999382
MDM	MARSHALL DON HUNTER SR	AK	LP	0	1	1	0.999966	6	0.999191
MDO	MIDDLETON ISLAND	AK	LP	1	0.999691	1	0.999470	1	0.999393
OOK	TOKSOOK BAY	AK	LP	0	1	2	0.999950	45	0.997295
ORT	NORTHWAY	AK	LP	1	0.999603	1	0.999378	1	0.999203
OTZ	RALPH WIEN MEMORIAL	AK	LPV200	2	0.999317	4	0.998996	91	0.992388
PAQ	PALMER MUNICIPAL	AK	LP	1	0.999718	1	0.999493	2	0.999382
RBY	RUBY	AK	LPV	1	0.999748	1	0.999496	4	0.999309
SCC	DEADHORSE	AK	LPV	1	0.999741	2	0.999302	52	0.996844
SCM	SCAMMON BAY	AK	LP	0	1	1	0.999966	18	0.998653
SHG	SHUNGNAK	AK	LP	2	0.999920	1	0.999493	6	0.999016
SHX	SHAGELUK	AK	LPV	1	0.999943	1	0.999714	5	0.999290
SMK	ST MICHAEL	AK	LPV	1	0.999996	1	0.999855	6	0.999077
UNK	UNALAKLEET	AK	LP	1	0.999969	1	0.999824	6	0.999180
WLK	SELAWIK	AK	LPV	1	0.999931	1	0.999653	8	0.998882
WNA	NAPAKIAK	AK	LPV	0	1	2	0.999973	8	0.999161
YAK	YAKUTAT	AK	LPV200	1	0.999565	2	0.999489	1	0.999222
06A	MOTON FIELD MUNICIPAL	AL	LPV	0	1	0	1	1	0.999916
0J6	HEADLAND MUNICIPAL	AL	LPV	0	1	0	1	1	0.999905

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
0R1	ATMORE MUNICIPAL	AL	LP	0	1	0	1	1	0.999924
12J	BREWTON MUNICIPAL	AL	LPV	0	1	0	1	1	0.999916
1M4	POSEY FIELD	AL	LPV	0	1	0	1	1	0.999874
1R8	BAY MINETTE MUNICIPAL	AL	LPV	0	1	0	1	1	0.999935
2R5	ST ELMO	AL	LPV	0	1	0	1	1	0.999954
3A1	FOLSOM FIELD	AL	LPV	0	1	0	1	1	0.999874
3M8	NORTH PICKENS	AL	LP	0	1	0	1	1	0.999897
4A9	ISBELL FIELD	AL	LPV	0	1	0	1	1	0.999870
5R4	FOLEY MUNICIPAL	AL	LPV	0	1	0	1	1	0.999939
79J	SOUTH ALABAMA RGNL AT BILL BENTON FIELD	AL	LPV	0	1	0	1	1	0.999916
8A0	ALBERTVILLE MUNICIPAL-T. J. BRUMLIK FIELD	AL	LPV	0	1	0	1	1	0.999874
9A4	LAWRENCE COUNTY	AL	LPV200	0	1	0	1	1	0.999866
ANB	ANNISTON METROPOLITAN	AL	LPV	0	1	0	1	1	0.999889
ASN	TALLADEGA MUNICIPAL	AL	LPV200	0	1	0	1	1	0.999889
AUO	AUBURN UNIVERSITY RGNL	AL	LPV200	0	1	0	1	1	0.999912
BFM	MOBILE DOWNTOWN	AL	LPV200	0	1	0	1	1	0.999947
BHM	BIRMINGHAM INTL	AL	LPV200	0	1	0	1	1	0.999889
CQF	H L SONNY CALLAHAN	AL	LPV200	0	1	0	1	1	0.999943
DCU	PRYOR FIELD RGNL	AL	LPV200	0	1	0	1	1	0.999866
DHN	DOTHAN RGNL	AL	LPV200	0	1	0	1	1	0.999905
EDN	ENTERPRISE MUNICIPAL	AL	LPV	0	1	0	1	1	0.999912
EET	SHELBY COUNTY	AL	LPV	0	1	0	1	1	0.999897
EKY	BESSEMER	AL	LPV	0	1	0	1	1	0.999897
EUF	WEEDON FIELD	AL	LPV	0	1	0	1	1	0.999905
GAD	NORTHEAST ALABAMA RGNL	AL	LPV200	0	1	0	1	1	0.999878
HAB	MARION COUNTY-RANKIN FITE	AL	LPV	0	1	0	1	1	0.999882
HSV	HUNTSVILLE INTL-CARL T JONES FLD	AL	LPV200	0	1	0	1	1	0.999863
JFX	WALKER COUNTY-BEVILL FIELD	AL	LPV	0	1	0	1	1	0.999886
JKA	JACK EDWARDS	AL	LPV200	0	1	0	1	1	0.999943
M95	RICHARD ARTHUR FIELD	AL	LPV	0	1	0	1	1	0.999893
MDQ	MADISON COUNTY EXECUTIVE/TOM SHARP JR FLD	AL	LPV	0	1	0	1	1	0.999859
MGM	MONTGOMERY RGNL (DANNELLY FIELD)	AL	LPV200	0	1	0	1	1	0.999916
MOB	MOBILE RGNL	AL	LPV200	0	1	0	1	1	0.999950
MSL	NORTHWEST ALABAMA RGNL	AL	LPV200	0	1	0	1	1	0.999863
PLR	ST CLAIR COUNTY	AL	LPV	0	1	0	1	1	0.999889
PYP	CENTRE-PIEDMONT CHEROKEE COUNTY RGNL	AL	LPV	0	1	0	1	1	0.999878
SCD	MERKEL FIELD SYLACAUGA	AL	LPV	0	1	0	1	1	0.999897

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
	MUNICIPAL								
SEM	CRAIG FIELD	AL	LPV	0	1	0	1	1	0.999920
TCL	TUSCALOOSA RGNL	AL	LPV	0	1	0	1	1	0.999905
TOI	TROY MUNICIPAL	AL	LPV	0	1	0	1	1	0.999916
4M3	CARLISLE MUNICIPAL	AR	LPV	0	1	0	1	1	0.999943
7M1	MC GEHEE MUNICIPAL	AR	LP	0	1	0	1	1	0.999947
ARG	WALNUT RIDGE RGNL	AR	LPV200	0	1	0	1	1	0.999928
ASG	SPRINGDALE MUNICIPAL	AR	LPV	0	1	0	1	0	1
AWM	WEST MEMPHIS MUNICIPAL	AR	LPV200	0	1	0	1	1	0.999901
BPK	OZARK RGNL	AR	LPV	0	1	0	1	1	0.999966
BVX	BATESVILLE RGNL	AR	LPV	0	1	0	1	1	0.999947
BYH	ARKANSAS INTL	AR	LPV200	0	1	0	1	1	0.999901
CDH	HARRELL FIELD	AR	LPV	0	1	0	1	1	0.999992
ELD	SOUTH ARKANSAS RGNL AT GOODWIN FIELD	AR	LPV	0	1	0	1	1	0.999996
FSM	FORT SMITH RGNL	AR	LPV200	0	1	0	1	0	1
FYV	DRAKE FIELD	AR	LPV	0	1	0	1	0	1
HRO	BOONE COUNTY	AR	LPV	0	1	0	1	1	0.999992
JBR	JONESBORO MUNICIPAL	AR	LPV	0	1	0	1	1	0.999916
LIT	ADAMS FIELD	AR	LPV200	0	1	0	1	1	0.999962
M19	NEWPORT MUNICIPAL	AR	LPV	0	1	0	1	1	0.999931
M77	HOWARD COUNTY	AR	LP	0	1	0	1	0	1
ORK	NORTH LITTLE ROCK MUNICIPAL	AR	LPV	0	1	0	1	1	0.999962
PBF	GRIDER FIELD	AR	LPV	0	1	0	1	1	0.999954
ROG	ROGERS MUNICIPAL-CARTER FIELD	AR	LPV	0	1	0	1	0	1
RUE	RUSSELLVILLE RGNL	AR	LPV	0	1	0	1	1	0.999996
SGT	STUTTGART MUNICIPAL	AR	LPV	0	1	0	1	1	0.999935
SLG	SMITH FIELD	AR	LPV	0	1	0	1	0	1
SRC	SEARCY MUNICIPAL	AR	LPV	0	1	0	1	1	0.999939
SUZ	SALINE COUNTY RGNL	AR	LPV	0	1	0	1	1	0.999969
TXK	TEXARKANA RGNL-WEBB FIELD	AR	LPV	0	1	0	1	0	1
VBT	BENTONVILLE MUNICIPAL/LOUISE M THADEN FIELD	AR	LPV	0	1	0	1	0	1
XNA	NORTHWEST ARKANSAS RGNL	AR	LPV200	0	1	0	1	0	1
AVQ	MARANA RGNL	AZ	LP	0	1	0	1	8	0.999943
D68	SPRINGERVILLE MUNICIPAL	AZ	LP	0	1	0	1	0	1
DVT	PHOENIX DEER VALLEY	AZ	LPV	0	1	0	1	0	1
FFZ	FALCON FLD	AZ	LP	0	1	0	1	0	1
FHU	SIERRA VISTA MUNICIPAL-LIBBY AAF	AZ	LPV200	0	1	0	1	26	0.999840

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
FLG	FLAGSTAFF PULLIAM	AZ	LPV	0	1	0	1	0	1
GEU	GLENDALE MUNICIPAL	AZ	LPV	0	1	0	1	0	1
HII	LAKE HAVASU CITY	AZ	LPV	0	1	0	1	0	1
IFP	LAUGHLIN/BULLHEAD INTL	AZ	LPV	0	1	0	1	0	1
IGM	KINGMAN	AZ	LPV	0	1	0	1	0	1
IWA	PHOENIX-MESA GATEWAY	AZ	LPV200	0	1	0	1	0	1
P33	COCHISE COUNTY	AZ	LPV	0	1	0	1	0	1
PGA	PAGE MUNICIPAL	AZ	LPV	0	1	0	1	0	1
PHX	PHOENIX SKY HARBOR INTL	AZ	LPV	0	1	0	1	1	0.999996
PRC	ERNEST A. LOVE FIELD	AZ	LPV	0	1	0	1	0	1
RQE	WINDOW ROCK	AZ	LP	0	1	0	1	0	1
SAD	SAFFORD RGNL	AZ	LPV	0	1	0	1	0	1
SJN	ST JOHNS INDUSTRIAL AIR PARK	AZ	LP	0	1	0	1	0	1
SOW	SHOW LOW RGNL	AZ	LPV	0	1	0	1	0	1
TUS	TUCSON INTL	AZ	LPV	0	1	0	1	13	0.999928
CYBL	CAMPBELL RIVER	BC	LPV	1	0.999889	2	0.999584	3	0.999054
CYCD	NANAIMO	BC	LPV	0	1	2	0.999664	3	0.999103
CYVR	VANCOUVER INTL	BC	LPV	1	0.999973	2	0.999657	2	0.999107
CYXS	PRINCE GEORGE	BC	LPV	2	0.999443	1	0.999237	2	0.998977
CYYJ	VICTORIA INTL	BC	LPV	0	1	2	0.999828	2	0.999107
CZBB	VANCOUVER / BOUNDARY BAY	BC	LPV	1	0.999996	2	0.999679	2	0.999107
AAT	ALTURAS MUNICIPAL	CA	LPV	0	1	0	1	1	0.999928
ACV	ARCATA	CA	LPV200	0	1	0	1	91	0.995437
APC	NAPA COUNTY	CA	LPV	0	1	0	1	124	0.995333
APV	APPLE VALLEY	CA	LPV	0	1	0	1	0	1
AUN	AUBURN MUNICIPAL	CA	LPV	0	1	0	1	37	0.999290
BFL	MEADOWS FIELD	CA	LPV200	0	1	0	1	16	0.999802
BLH	BLYTHE	CA	LP	0	1	0	1	0	1
C83	BYRON	CA	LPV	0	1	0	1	121	0.996123
CCR	BUCHANAN FIELD	CA	LPV	0	1	0	1	122	0.995303
CEC	JACK MC NAMARA FIELD	CA	LPV200	0	1	0	1	87	0.995856
CIC	CHICO MUNICIPAL	CA	LPV	0	1	0	1	70	0.998832
CMA	CAMARILLO	CA	LPV	0	1	0	1	36	0.999229
CNO	CHINO	CA	LPV	0	1	0	1	1	0.999897
CRQ	MC CLELLAN-PALOMAR	CA	LPV200	0	1	0	1	2	0.999748
CVH	HOLLISTER MUNICIPAL	CA	LPV	0	1	0	1	114	0.993326
DAG	BARSTOW-DAGGETT	CA	LPV	0	1	0	1	0	1
DWA	YOLO COUNTY-DAVIS/WOODLAND/WINTERS	CA	LPV	0	1	0	1	115	0.997283
FAT	FRESNO YOSEMITE INTL	CA	LPV	0	1	0	1	29	0.999416
HAF	HALF MOON BAY	CA	LPV	0	1	0	1	115	0.990942
HHR	HAWTHORNE JACK NORTHROP	CA	LPV	0	1	0	1	5	0.999672

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
	FIELD								
HWD	HAYWARD EXECUTIVE	CA	LPV	0	1	0	1	122	0.993151
LAX	LOS ANGELES INTL	CA	LPV	0	1	0	1	7	0.999668
LGB	LONG BEACH/DAUGHERTY FIELD	CA	LPV	0	1	0	1	2	0.999676
LHM	LINCOLN RGNL/KARL HARDER FIELD	CA	LPV200	0	1	0	1	74	0.998893
LLR	LITTLE RIVER	CA	LP	0	1	0	1	121	0.993578
LSN	LOS BANOS MUNICIPAL	CA	LPV	0	1	0	1	90	0.996016
LVK	LIVERMORE MUNICIPAL	CA	LPV	0	1	0	1	121	0.994467
MAE	MADERA MUNICIPAL	CA	LPV	0	1	0	1	35	0.999107
MCE	MERCED RGNL/MACREADY FIELD	CA	LPV	0	1	0	1	46	0.998413
MER	CASTLE	CA	LPV200	0	1	0	1	46	0.998413
MHR	SACRAMENTO MATHER	CA	LPV200	0	1	0	1	78	0.998619
MIT	SHAFTER-MINTER FIELD	CA	LPV	0	1	0	1	18	0.999760
MOD	MODESTO CITY-CO-HARRY SHAM FLD	CA	LPV	0	1	0	1	76	0.997451
MRY	MONTEREY PENINSULA	CA	LPV	0	1	0	1	108	0.990755
MYF	MONTGOMERY FIELD	CA	LPV200	0	1	0	1	3	0.999702
MYV	YUBA COUNTY	CA	LPV200	0	1	0	1	80	0.998649
O02	NERVINO	CA	LPV	0	1	0	1	4	0.999828
O27	OAKDALE	CA	LPV	0	1	0	1	51	0.998443
O69	PETALUMA MUNICIPAL	CA	LPV	0	1	0	1	125	0.994601
O88	RIO VISTA MUNICIPAL	CA	LP	0	1	0	1	118	0.996535
OAK	METROPOLITAN OAKLAND INTL	CA	LPV	0	1	0	1	121	0.993025
ONT	ONTARIO INTL	CA	LPV	0	1	0	1	1	0.999897
OVE	OROVILLE MUNICIPAL	CA	LPV	0	1	0	1	72	0.998958
OXR	OXNARD	CA	LPV	0	1	0	1	51	0.998939
PMD	PALMDALE USAF PLANT 42	CA	LPV200	0	1	0	1	0	1
POC	BRACKETT FIELD	CA	LPV	0	1	0	1	1	0.999901
PRB	PASO ROBLES MUNICIPALCIPAL	CA	LPV200	0	1	0	1	98	0.992884
PVF	PLACERVILLE	CA	LPV	0	1	0	1	20	0.999393
RAL	RIVERSIDE MUNICIPAL	CA	LPV	0	1	0	1	1	0.999897
RBL	RED BLUFF MUNICIPAL	CA	LPV	0	1	0	1	71	0.998367
RDD	REDDING MUNICIPAL	CA	LPV	0	1	0	1	67	0.998489
RHV	REID-HILLVIEW OF SANTA CLARA	CA	LPV	0	1	0	1	116	0.992315
SAC	SACRAMENTO EXECUTIVE	CA	LPV200	0	1	0	1	100	0.998218
SAN	SAN DIEGO INTL	CA	LP	0	1	0	1	4	0.999599
SBA	SANTA BARBARA MUNICIPAL	CA	LPV	0	1	0	1	90	0.995467
SBP	SAN LUIS COUNTY RGNL	CA	LPV200	0	1	0	1	95	0.991136

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
SCK	STOCKTON METROPOLITAN	CA	LPV	0	1	0	1	96	0.997573
SEE	GILLESPIE FIELD	CA	LP	0	1	0	1	3	0.999790
SFO	SAN FRANCISCO INTL	CA	LPV	0	1	0	1	120	0.991983
SJC	NORMAN Y. MINETA SAN JOSE INTL	CA	LPV	0	1	0	1	117	0.992102
SMF	SACRAMENTO INTL	CA	LPV200	0	1	0	1	99	0.998149
SMX	SANTA MARIA PUBLIC/CAPT G ALLAN HANCOCK FIELD	CA	LPV200	0	1	0	1	97	0.990938
SNA	JOHN WAYNE-ORANGE COUNTY	CA	LPV	0	1	0	1	1	0.999794
SNS	SALINAS MUNICIPAL	CA	LPV200	0	1	0	1	110	0.991831
STS	CHARLES M. SCHULZ-SONOMA COUNTY	CA	LPV	0	1	0	1	122	0.994727
TCY	TRACY MUNICIPAL	CA	LPV	0	1	0	1	118	0.996028
TOA	ZAMPERINI FIELD	CA	LPV200	0	1	0	1	6	0.999626
VCB	NUT TREE	CA	LPV	0	1	0	1	119	0.996440
VCV	SOUTHERN CALIFORNIA LOGISTICS	CA	LPV	0	1	0	1	0	1
VIS	VISALIA MUNICIPAL	CA	LPV200	0	1	0	1	17	0.999699
WJF	GENERAL WM J FOX AIRFIELD	CA	LPV	0	1	0	1	1	0.999996
WLW	WILLOWS-GLENN COUNTY	CA	LPV	0	1	0	1	87	0.997741
ALS	SAN LUIS VALLEY RGNL/BERGMAN FIELD	CO	LPV200	0	1	0	1	1	0.999977
APA	CENTENNIAL	CO	LPV200	0	1	0	1	1	0.999882
BJC	ROCKY MOUNTAIN METROPOLITAN	CO	LPV200	0	1	0	1	1	0.999878
CEZ	CORTEZ MUNICIPAL	CO	LPV	0	1	0	1	0	1
COS	CITY OF COLORADO SPRINGS MUNICIPAL	CO	LPV200	0	1	0	1	1	0.999901
DEN	DENVER INTL	CO	LPV200	0	1	0	1	2	0.999863
DRO	DURANGO-LA PLATA COUNTY	CO	LPV200	0	1	0	1	0	1
FMM	FORT MORGAN MUNICIPAL	CO	LP	0	1	0	1	2	0.999828
FNL	FORT COLLINS-LOVELAND MUNICIPAL	CO	LPV200	0	1	0	1	2	0.999866
FTG	FRONT RANGE	CO	LPV200	0	1	0	1	2	0.999863
GJT	GRAND JUNCTION RGNL	CO	LPV200	0	1	0	1	0	1
GXY	GREELEY-WELD COUNTY	CO	LPV	0	1	0	1	2	0.999847
HDN	YAMPA VALLEY	CO	LPV	0	1	0	1	0	1
ITR	KIT CARSON COUNTY	CO	LPV	0	1	0	1	2	0.999821
LAA	LAMAR MUNICIPAL	CO	LPV	0	1	0	1	2	0.999866
LHX	LA JUNTA MUNICIPAL	CO	LPV	0	1	0	1	2	0.999889
MTJ	MONTROSE RGNL	CO	LPV	0	1	0	1	0	1
PUB	PUEBLO MEMORIAL	CO	LPV200	0	1	0	1	1	0.999908
RIL	GARFIELD COUNTY RGNL	CO	LPV	0	1	0	1	0	1
STK	STERLING MUNICIPAL	CO	LPV	0	1	0	1	2	0.999809

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
TEX	TELLURIDE RGNL	CO	LP	0	1	0	1	0	1
BDL	BRADLEY INTL	CT	LPV200	0	1	1	0.999889	1	0.999622
GON	GROTON-NEW LONDON	CT	LPV	0	1	1	0.999886	1	0.999630
HVN	TWEED-NEW HAVEN	CT	LPV	0	1	1	0.999893	1	0.999638
IJD	WINDHAM	CT	LP	0	1	1	0.999882	1	0.999622
OXC	WATERBURY-OXFORD	CT	LPV	0	1	1	0.999893	1	0.999634
DCA	RONALD REAGAN WASHINGTON NATL	DC	LPV	0	1	0	1	2	0.999561
HEF	MANASSAS RGNL/HARRY P. DAVIS FIELD	DC	LPV	0	1	0	1	2	0.999573
IAD	WASHINGTON DULLES INTL	DC	LPV200	0	1	0	1	2	0.999580
33N	DELAWARE AIRPARK	DE	LP	1	0.999962	2	0.999954	2	0.999542
EVY	SUMMIT	DE	LPV	0	1	1	0.999985	2	0.999649
GED	SUSSEX COUNTY	DE	LPV	1	0.999866	1	0.999855	2	0.999393
ILG	NEW CASTLE	DE	LPV	0	1	1	0.999969	2	0.999668
1J0	TRI-COUNTY	FL	LP	0	1	0	1	1	0.999901
28J	PALATKA MUNICIPALCIPAL ARPT	FL	LPV	0	1	0	1	1	0.999832
40J	PERRY-FOLEY	FL	LPV	0	1	0	1	1	0.999859
54J	DEFUNIAK SPRINGS	FL	LP	0	1	0	1	1	0.999908
AAF	APALACHICOLA MUNICIPAL	FL	LPV	0	1	0	1	1	0.999866
APF	NAPLES MUNICIPAL	FL	LPV	0	1	0	1	3	0.999355
AVO	AVON PARK EXECUTIVE	FL	LPV	0	1	0	1	2	0.999706
BCT	BOCA RATON	FL	LPV	0	1	0	1	4	0.999386
BKV	HERNANDO COUNTY	FL	LPV	0	1	0	1	1	0.999817
BOW	BARTOW MUNICIPAL	FL	LPV	0	1	0	1	2	0.999756
CEW	BOB SIKES	FL	LPV	0	1	0	1	1	0.999916
CHN	WAUCHULA MUNICIPAL	FL	LP	0	1	0	1	2	0.999744
COI	MERRITT ISLAND	FL	LPV	0	1	0	1	2	0.999748
CRG	CRAIG MUNICIPAL	FL	LPV200	0	1	0	1	1	0.999836
CTY	CROSS CITY	FL	LPV	0	1	0	1	1	0.999840
DAB	DAYTONA BEACH INTL	FL	LPV200	0	1	0	1	1	0.999813
DED	DELAND MUNICIPAL-SIDNEY H TAYLOR FLD	FL	LPV	0	1	0	1	1	0.999809
DTS	DESTIN-FORT WALTON BEACH	FL	LP	0	1	0	1	1	0.999905
ECP	NORTHWEST FLORIDA BEACHES INTL	FL	LPV200	0	1	0	1	1	0.999889
EVB	NEW SMYRNA BEACH MUNICIPAL	FL	LPV	0	1	0	1	1	0.999809
EYW	KEY WEST INTL	FL	LPV	0	1	2	0.999958	6	0.998871
F45	NORTH PALM BEACH COUNTY GENERAL AVIATION	FL	LPV	0	1	0	1	3	0.999531
FHB	FERNANDINA BEACH MUNICIPAL	FL	LPV	0	1	0	1	1	0.999844

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
FLL	FORT LAUDERDALE/HOLLYWOOD INTL	FL	LPV	0	1	0	1	4	0.999241
FMY	PAGE FIELD	FL	LPV	0	1	0	1	2	0.999531
FPR	ST LUCIE COUNTY INTL	FL	LPV	0	1	0	1	2	0.999679
FXE	FT LAUDERDALE EXECUTIVE	FL	LPV200	0	1	0	1	4	0.999336
GIF	WINTER HAVEN'S GILBERT	FL	LPV	0	1	0	1	2	0.999756
GNV	GAINESVILLE RGNL	FL	LPV	0	1	0	1	1	0.999832
HEG	HERLONG RECREATIONAL	FL	LP	0	1	0	1	1	0.999836
IMM	IMMOKALEE RGNL	FL	LPV	0	1	0	1	4	0.999431
ISM	KISSIMMEE GATEWAY	FL	LPV200	0	1	0	1	2	0.999798
JAX	JACKSONVILLE INTL	FL	LPV200	0	1	0	1	1	0.999844
LAL	LAKELAND LINDER RGNL	FL	LPV200	0	1	0	1	2	0.999756
LCQ	LAKE CITY MUNICIPAL	FL	LPV	0	1	0	1	1	0.999847
LEE	LEESBURG INTL	FL	LPV	0	1	0	1	1	0.999813
MCO	ORLANDO INTL	FL	LPV200	0	1	0	1	2	0.999798
MIA	MIAMI INTL	FL	LPV	0	1	1	0.999996	4	0.999199
MKY	MARCO ISLAND	FL	LPV	0	1	0	1	4	0.999286
MLB	MELBOURNE INTL	FL	LPV200	0	1	0	1	2	0.999737
MTH	THE FLORIDA KEYS MARATHON	FL	LPV	0	1	2	0.999950	5	0.998760
OBE	OKEECHOBEE COUNTY	FL	LPV	0	1	0	1	2	0.999668
OCF	OCALA INTL-JIM TAYLOR FLD	FL	LPV200	0	1	0	1	1	0.999824
OPF	OPA LOCKA EXECUTIVE	FL	LPV200	0	1	0	1	4	0.999206
ORL	EXECUTIVE	FL	LPV200	0	1	0	1	2	0.999798
PBI	PALM BEACH INTL	FL	LPV200	0	1	0	1	3	0.999493
PCM	PLANT CITY MUNICIPAL	FL	LPV	0	1	0	1	2	0.999756
PGD	PUNTA GORDA	FL	LPV200	0	1	0	1	2	0.999649
PHK	PALM BEACH COUNTY GLADES	FL	LPV	0	1	0	1	3	0.999531
PIE	ST PETERSBURG-CLEARWATER INTL	FL	LPV200	0	1	0	1	2	0.999756
PMP	POMPANO BEACH AIRPARK	FL	LPV	0	1	0	1	4	0.999344
PNS	PENSACOLA RGNL	FL	LPV200	0	1	0	1	1	0.999924
RSW	SOUTHWEST FLORIDA INTL	FL	LPV	0	1	0	1	2	0.999481
SEF	SEBRING RGNL	FL	LPV	0	1	0	1	2	0.999683
SFB	ORLANDO SANFORD INTL	FL	LPV200	0	1	0	1	1	0.999805
SGJ	ST AUGUSTINE	FL	LPV	0	1	0	1	1	0.999832
SRQ	SARASOTA/BRADENTON INTL	FL	LPV200	0	1	0	1	2	0.999733
SUA	WITHAM FIELD	FL	LPV	0	1	0	1	2	0.999580
TIX	SPACE COAST RGNL	FL	LPV200	0	1	0	1	2	0.999798
TLH	TALLAHASSEE RGNL	FL	LPV200	0	1	0	1	1	0.999874
TMB	KENDALL-TAMIAMI EXECUTIVE	FL	LPV200	0	1	1	0.999996	4	0.999180
TPA	TAMPA INTL	FL	LPV200	0	1	0	1	2	0.999756

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
TPF	PETER O KNIGHT	FL	LP	0	1	0	1	2	0.999756
VDF	TAMPA EXECUTIVE	FL	LPV	0	1	0	1	2	0.999756
VNC	VENICE MUNICIPAL	FL	LP	0	1	0	1	2	0.999695
VQQ	CECIL FIELD	FL	LPV	0	1	0	1	1	0.999836
VRB	VERO BEACH MUNICIPAL	FL	LPV200	0	1	0	1	2	0.999687
X07	LAKE WALES MUNICIPAL	FL	LP	0	1	0	1	2	0.999748
X14	LA BELLE MUNICIPAL	FL	LPV	0	1	0	1	3	0.999542
X26	SEBASTIAN MUNICIPAL	FL	LP	0	1	0	1	2	0.999695
X35	MARION CO & PARK OF COMMERCE	FL	LP	0	1	0	1	1	0.999824
X51	HOMESTEAD GENERAL AVIATION	FL	LPV	0	1	1	0.999996	4	0.999138
XFL	FLAGLER COUNTY	FL	LPV	0	1	0	1	1	0.999821
ZPH	ZEPHYRHILLS MUNICIPAL	FL	LPV	0	1	0	1	2	0.999798
09J	JEKYLL ISLAND	GA	LPV200	0	1	0	1	1	0.999855
15J	COOK COUNTY	GA	LPV	0	1	0	1	1	0.999878
17J	DONALSONVILLE MUNICIPAL	GA	LPV	0	1	0	1	1	0.999893
18A	FRANKLIN COUNTY	GA	LPV	0	1	0	1	1	0.999863
19A	JACKSON COUNTY	GA	LPV	0	1	0	1	1	0.999866
2J5	MILLEN	GA	LPV	0	1	0	1	1	0.999889
3J7	GREENE COUNTY RGNL	GA	LPV	0	1	0	1	1	0.999878
48A	COCHRAN	GA	LPV	0	1	0	1	1	0.999889
4A4	POLK COUNTY AIRPORT CORNELIUS MOORE FIELD	GA	LPV	0	1	0	1	1	0.999878
4J1	BRANTLEY COUNTY	GA	LPV	0	1	0	1	1	0.999866
4J6	ST MARYS	GA	LPV	0	1	0	1	1	0.999847
52A	MADISON MUNICIPAL	GA	LP	0	1	0	1	1	0.999882
6A2	GRIFFIN-SPALDING COUNTY	GA	LPV	0	1	0	1	1	0.999889
70J	CAIRO-GRADY COUNTY	GA	LPV	0	1	0	1	1	0.999878
ABY	SOUTHWEST GEORGIA RGNL	GA	LPV200	0	1	0	1	1	0.999893
ACJ	JIMMY CARTER RGNL	GA	LPV	0	1	0	1	1	0.999897
AGS	AUGUSTA RGNL AT BUSH FIELD	GA	LPV200	0	1	0	1	1	0.999886
AHN	ATHENS/BEN EPPS	GA	LPV	0	1	0	1	1	0.999874
AJR	HABERSHAM COUNTY	GA	LPV	0	1	0	1	1	0.999859
ATL	HARTSFIELD - JACKSON ATLANTA INTL	GA	LPV200	0	1	0	1	1	0.999882
AYS	WAYCROSS-WARE COUNTY	GA	LPV200	0	1	0	1	1	0.999870
BGE	DECATUR COUNTY INDUSTRIAL AIR PARK	GA	LPV200	0	1	0	1	1	0.999886
BHC	BAXLEY MUNICIPAL	GA	LPV	0	1	0	1	1	0.999882
BIJ	EARLY COUNTY	GA	LPV	0	1	0	1	1	0.999901
BQK	BRUNSWICK GOLDEN ISLES	GA	LPV200	0	1	0	1	1	0.999855
CCO	NEWNAN COWETA COUNTY	GA	LPV	0	1	0	1	1	0.999893

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
CKF	CRISP COUNTY-CORDELE	GA	LPV	0	1	0	1	1	0.999889
CNI	CHEROKEE COUNTY	GA	LPV	0	1	0	1	1	0.999863
CSG	COLUMBUS METROPOLITAN	GA	LPV	0	1	0	1	1	0.999908
CTJ	WEST GEORGIA RGNL-O V GRAY FIELD	GA	LPV	0	1	0	1	1	0.999889
CVC	COVINGTON MUNICIPAL	GA	LPV	0	1	0	1	1	0.999878
CWV	CLAXTON-EVANS COUNTY	GA	LPV	0	1	0	1	1	0.999882
D73	MONROE-WALTON COUNTY	GA	LP	0	1	0	1	1	0.999878
DNN	DALTON MUNICIPAL	GA	LPV	0	1	0	1	1	0.999859
DQH	DOUGLAS MUNICIPAL	GA	LPV200	0	1	0	1	1	0.999882
EZM	HEART OF GEORGIA RGNL	GA	LPV	0	1	0	1	1	0.999889
FFC	ATLANTA RGNL FALCON FIELD	GA	LPV200	0	1	0	1	1	0.999889
FTY	FULTON COUNTY AIRPORT-BROWN FIELD	GA	LPV	0	1	0	1	1	0.999882
FZG	FITZGERALD MUNICIPAL	GA	LPV	0	1	0	1	1	0.999886
GVL	LEE GILMER MEMORIAL	GA	LPV	0	1	0	1	1	0.999866
HOE	HOMERVILLE	GA	LPV	0	1	0	1	1	0.999874
HQU	THOMSON-MCDUFFIE COUNTY	GA	LPV	0	1	0	1	1	0.999878
IYY	WASHINGTON-WILKES COUNTY	GA	LPV	0	1	0	1	1	0.999870
JES	JESUP-WAYNE COUNTY	GA	LPV	0	1	0	1	1	0.999870
JYL	PLANTATION ARPK	GA	LPV	0	1	0	1	1	0.999882
JZP	PICKENS COUNTY	GA	LPV	0	1	0	1	1	0.999863
LGC	LAGRANGE-CALLAWAY	GA	LPV200	0	1	0	1	1	0.999901
LZU	GWINNETT COUNTY-BRISCOE FIELD	GA	LPV200	0	1	0	1	1	0.999874
MAC	MACON DOWNTOWN	GA	LP	0	1	0	1	1	0.999893
MCN	MIDDLE GEORGIA RGNL	GA	LPV200	0	1	0	1	1	0.999893
MGR	MOULTRIE MUNICIPAL	GA	LPV200	0	1	0	1	1	0.999878
MLJ	BALDWIN COUNTY	GA	LPV	0	1	0	1	1	0.999889
MQW	TELFAIR-WHEELER	GA	LPV	0	1	0	1	1	0.999889
OKZ	KAOLIN FIELD	GA	LPV	0	1	0	1	1	0.999889
OPN	THOMASTON-UPSON COUNTY	GA	LPV200	0	1	0	1	1	0.999897
PIM	HARRIS COUNTY	GA	LPV	0	1	0	1	1	0.999905
PUJ	PAULDING NORTHWEST ATLANTA	GA	LPV200	0	1	0	1	1	0.999878
PXE	PERRY-HOUSTON COUNTY	GA	LPV	0	1	0	1	1	0.999893
RMG	RICHARD B RUSSELL	GA	LPV	0	1	0	1	1	0.999870
RVJ	SWINTON SMITH FLD AT REIDSVILLE MUNICIPAL	GA	LP	0	1	0	1	1	0.999882
RYY	COBB COUNTY-MC COLLUM FIELD	GA	LPV200	0	1	0	1	1	0.999874
SAV	SAVANNAH/HILTON HEAD INTL	GA	LPV200	0	1	0	1	1	0.999870

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
SBO	EAST GEORGIA REGIONAL	GA	LPV	0	1	0	1	1	0.999889
TBR	STATESBORO-BULLOCH COUNTY	GA	LPV	0	1	0	1	1	0.999886
TMA	HENRY TIFTON MYERS	GA	LPV	0	1	0	1	1	0.999886
TOC	TOCCOA RG LETOURNEAU FIELD	GA	LPV	0	1	0	1	1	0.999859
TVI	THOMASVILLE RGNL	GA	LPV	0	1	0	1	1	0.999878
VDI	VIDALIA RGNL	GA	LPV	0	1	0	1	1	0.999889
VLD	VALDOSTA RGNL	GA	LPV	0	1	0	1	1	0.999874
VPC	CARTERSVILLE	GA	LPV	0	1	0	1	1	0.999874
WDR	WINDER-BARROW	GA	LPV	0	1	0	1	1	0.999874
AIO	ATLANTIC MUNICIPAL	IA	LPV	0	1	1	0.999905	1	0.999832
ALO	WATERLOO RGNL	IA	LPV	0	1	1	0.999870	2	0.999676
AMW	AMES MUNICIPAL	IA	LPV	0	1	1	0.999866	1	0.999725
AWG	WASHINGTON MUNICIPAL	IA	LPV200	0	1	0	1	2	0.999886
BRL	SOUTHEAST IOWA RGNL	IA	LPV200	0	1	0	1	1	0.999947
CBF	COUNCIL BLUFFS MUNICIPAL	IA	LPV200	0	1	1	0.999928	1	0.999851
CID	THE EASTERN IOWA	IA	LPV200	0	1	0	1	2	0.999832
CIN	ARTHUR N NEU	IA	LPV	0	1	1	0.999828	1	0.999710
CKP	CHEROKEE COUNTY RGNL	IA	LPV	0	1	1	0.999710	1	0.999634
CSQ	CRESTON MUNICIPAL	IA	LPV	0	1	0	1	1	0.999920
CWI	CLINTON MUNICIPAL	IA	LPV200	0	1	0	1	1	0.999931
DBQ	DUBUQUE RGNL	IA	LPV200	0	1	0	1	2	0.999828
DEH	DECORAH MUNICIPAL	IA	LPV	0	1	1	0.999874	2	0.999741
DNS	DENISON MUNICIPAL	IA	LPV	0	1	1	0.999821	1	0.999710
DSM	DES MOINES INTL	IA	LPV	0	1	1	0.999931	2	0.999836
DVN	DAVENPORT MUNICIPAL	IA	LPV200	0	1	0	1	2	0.999928
EBS	WEBSTER CITY MUNICIPAL	IA	LPV	0	1	1	0.999832	1	0.999706
EFW	JEFFERSON MUNICIPAL	IA	LPV	0	1	1	0.999840	1	0.999714
EOK	KEOKUK MUNICIPAL	IA	LPV	0	1	0	1	1	0.999954
EST	ESTHERVILLE MUNICIPAL	IA	LPV	1	0.999958	1	0.999706	1	0.999706
FFL	FAIRFIELD MUNICIPAL	IA	LPV	0	1	0	1	2	0.999943
FOD	FORT DODGE RGNL	IA	LPV200	0	1	1	0.999725	1	0.999706
FXY	FOREST CITY MUNICIPAL	IA	LPV	0	1	1	0.999710	2	0.999702
GGI	GRINNELL RGNL	IA	LPV	0	1	1	0.999943	2	0.999832
I75	OSCEOLA MUNICIPAL	IA	LPV	0	1	0	1	2	0.999924
ICL	SCHENCK FIELD	IA	LPV	0	1	0	1	1	0.999996
IIB	INDEPENDENCE MUNICIPAL	IA	LP	0	1	1	0.999889	3	0.999809
IKV	ANKENY RGNL	IA	LPV	0	1	1	0.999905	2	0.999832
IOW	IOWA CITY MUNICIPAL	IA	LPV	0	1	0	1	2	0.999840
LRJ	LE MARS MUNICIPAL	IA	LPV	0	1	1	0.999710	2	0.999596
MCW	MASON CITY MUNICIPAL	IA	LPV200	0	1	1	0.999836	2	0.999699
MPZ	MOUNT PLEASANT MUNICIPALCIPAL	IA	LPV	0	1	0	1	1	0.999954

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
MUT	MUSCATINE MUNICIPAL	IA	LPV	0	1	0	1	2	0.999897
MXO	MONTICELLO RGNL	IA	LP	0	1	0	1	2	0.999832
OOA	OSKALOOSA MUNICIPAL	IA	LPV	0	1	0	1	2	0.999886
OTM	OTTUMWA RGNL	IA	LPV	0	1	0	1	2	0.999916
OXV	KNOXVILLE MUNICIPAL	IA	LPV	0	1	0	1	2	0.999866
PEA	PELLA MUNICIPAL	IA	LPV	0	1	0	1	2	0.999851
POH	POCAHONTAS MUNICIPAL	IA	LPV	0	1	1	0.999710	1	0.999706
PRO	PERRY MUNICIPAL	IA	LPV200	0	1	1	0.999866	1	0.999748
RDK	RED OAK MUNICIPAL	IA	LPV	0	1	0	1	1	0.999908
SDA	SHENANDOAH MUNICIPAL	IA	LPV	0	1	0	1	1	0.999985
SHL	SHELDON MUNICIPAL	IA	LPV	1	0.999908	1	0.999706	2	0.999596
SKI	SAC CITY MUNICIPAL	IA	LPV	0	1	1	0.999721	1	0.999706
SLB	STORM LAKE MUNICIPAL	IA	LPV	0	1	1	0.999710	1	0.999706
SPW	SPENCER MUNICIPAL	IA	LPV200	1	0.999977	1	0.999706	1	0.999706
SUX	SIOUX GATEWAY/COL BUD DAY FIELD	IA	LPV200	0	1	1	0.999718	2	0.999596
TNU	NEWTON MUNICIPAL	IA	LPV	0	1	1	0.999931	2	0.999836
TVK	CENTERVILLE MUNICIPAL	IA	LPV	0	1	0	1	1	0.999981
TZT	BELLE PLAINE MUNICIPAL	IA	LPV	0	1	1	0.999939	2	0.999832
VTI	VINTON VETERANS MEML ARPK	IA	LPV	0	1	1	0.999905	3	0.999817
BOI	BOISE AIR TERMINAL/GOWEN FLD	ID	LPV	0	1	0	1	0	1
COE	PAPPY BOYINGTON FIELD	ID	LPV200	0	1	1	0.999790	2	0.999618
DIJ	DRIGGS-REED MEMORIAL	ID	LP	0	1	0	1	0	1
EUL	CALDWELL INDUSTRIAL	ID	LPV	0	1	0	1	0	1
GNG	GOODING MUNICIPAL	ID	LPV	0	1	0	1	0	1
IDA	IDAHO FALLS RGNL	ID	LPV200	0	1	0	1	0	1
JER	JEROME COUNTY	ID	LPV	0	1	0	1	0	1
LWS	LEWISTON-NEZ PERCE COUNTY	ID	LPV200	0	1	1	0.999973	1	0.999847
MAN	NAMPA MUNICIPAL	ID	LPV	0	1	0	1	0	1
MYL	MC CALL MUNICIPALCIPAL	ID	LPV	0	1	0	1	0	1
PIH	POCATELLO RGNL	ID	LPV200	0	1	0	1	0	1
TWF	JOSLIN FIELD-MAGIC VALLEY RGNL	ID	LPV200	0	1	0	1	0	1
U76	MOUNTAIN HOME MUNICIPAL	ID	LPV	0	1	0	1	0	1
3LF	LITCHFIELD MUNICIPAL	IL	LPV	0	1	0	1	1	0.999908
3MY	MOUNT HAWLEY AUXILIARY	IL	LPV	0	1	0	1	1	0.999912
AJG	MOUNT CARMEL MUNICIPAL	IL	LPV	0	1	0	1	1	0.999870
ALN	ST LOUIS RGNL	IL	LPV200	0	1	0	1	1	0.999916
ARR	AURORA MUNICIPAL	IL	LPV200	0	1	0	1	1	0.999897
BLV	SCOTT AFB/MIDAMERICA	IL	LPV200	0	1	0	1	1	0.999912
BMI	CENTRAL IL REGL ARPT AT	IL	LPV	0	1	0	1	1	0.999897

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
	BLOOMINGTON-NORMAL								
C15	PEKIN MUNICIPAL	IL	LPV	0	1	0	1	1	0.999912
C73	DIXON MUNICIPAL-CHARLES R. WALGREEN FLD	IL	LPV	0	1	0	1	1	0.999912
CMI	UNIVERSITY OF ILLINOIS-WILLARD	IL	LPV200	0	1	0	1	1	0.999886
CPS	ST LOUIS DOWNTOWN	IL	LPV200	0	1	0	1	1	0.999916
CUL	CARMI MUNICIPAL	IL	LP	0	1	0	1	1	0.999874
DEC	DECATUR	IL	LPV200	0	1	0	1	1	0.999897
DKB	DE KALB TAYLOR MUNICIPAL	IL	LPV	0	1	0	1	1	0.999901
DNV	VERMILION COUNTY	IL	LPV	0	1	0	1	1	0.999866
DPA	DUPAGE	IL	LPV200	0	1	0	1	1	0.999889
ENL	CENTRALIA MUNICIPAL	IL	LPV	0	1	0	1	1	0.999897
FEP	ALBERTUS	IL	LPV	0	1	0	1	1	0.999916
FOA	FLORA MUNICIPAL	IL	LPV	0	1	0	1	1	0.999886
GBG	GALESBURG MUNICIPAL	IL	LPV200	0	1	0	1	1	0.999931
HSB	HARRISBURG-RALEIGH	IL	LPV	0	1	0	1	1	0.999878
I63	MOUNT STERLING MUNICIPAL	IL	LPV	0	1	0	1	1	0.999939
IGQ	LANSING MUNICIPAL	IL	LPV	0	1	0	1	1	0.999870
IKK	GREATER KANKAKEE	IL	LPV	0	1	0	1	1	0.999878
LOT	LEWIS UNIVERSITY	IL	LPV200	0	1	0	1	1	0.999889
LWV	LAWRENCEVILLE-VINCENNES INTL	IL	LPV200	0	1	0	1	1	0.999866
MDW	CHICAGO MIDWAY INTL	IL	LPV	0	1	0	1	1	0.999878
MLI	QUAD CITY INTL	IL	LPV200	0	1	0	1	1	0.999935
MTO	COLES COUNTY MEMORIAL	IL	LPV	0	1	0	1	1	0.999886
MVN	MOUNT VERNON	IL	LPV	0	1	0	1	1	0.999889
MWA	WILLIAMSON COUNTY RGNL	IL	LPV200	0	1	0	1	1	0.999889
ORD	CHICAGO-O'HARE INTL	IL	LPV200	0	1	0	1	1	0.999882
PIA	GREATER PEORIA RGNL	IL	LPV	0	1	0	1	1	0.999916
PNT	PONTIAC MUNICIPAL	IL	LPV	0	1	0	1	1	0.999893
PWK	CHICAGO EXECUTIVE	IL	LPV	0	1	0	1	1	0.999886
RFD	CHICAGO/ROCKFORD INTL	IL	LPV200	0	1	0	1	1	0.999908
RPJ	ROCHELLE MUNICIPAL-KORITZ FIELD	IL	LPV200	0	1	0	1	1	0.999905
RSV	ROBINSON MUNICIPAL	IL	LPV	0	1	0	1	1	0.999870
SAR	SPARTA COMMUNICIPALTY-HUNTER FIELD	IL	LPV	0	1	0	1	1	0.999905
SFY	TRI-TOWNSHIP	IL	LP	0	1	0	1	1	0.999928
SPI	ABRAHAM LINCOLN CAPITAL	IL	LPV	0	1	0	1	1	0.999912
SQI	WHITESIDE COUNTY-JOS J BITTORF FLD	IL	LPV	0	1	0	1	1	0.999916
UGN	WAUKEGAN RGNL	IL	LPV	0	1	0	1	1	0.999882
UIN	QUINCY RGNL-BALDWIN FIELD	IL	LPV200	0	1	0	1	1	0.999947

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
4I7	PUTNAM COUNTY	IN	LPV	0	1	0	1	1	0.999847
AID	ANDERSON MUNICIPAL-DARLINGTON FIELD	IN	LPV	0	1	0	1	1	0.999828
ASW	WARSAW MUNICIPALCIPAL	IN	LPV	0	1	0	1	1	0.999840
BAK	COLUMBUS MUNICIPAL	IN	LPV	0	1	0	1	1	0.999832
BFR	VIRGIL I GRISSOM MUNICIPAL	IN	LP	0	1	0	1	1	0.999836
BMG	MONROE COUNTY	IN	LPV200	0	1	0	1	1	0.999844
CEV	METTEL FIELD	IN	LPV	0	1	0	1	1	0.999817
EKM	ELKHART MUNICIPAL	IN	LPV	0	1	0	1	1	0.999844
EVV	EVANSVILLE RGNL	IN	LPV200	0	1	0	1	1	0.999859
EYE	EAGLE CREEK AIRPARK	IN	LPV	0	1	0	1	1	0.999840
FRH	FRENCH LICK MUNICIPAL	IN	LPV	0	1	0	1	1	0.999844
FWA	FORT WAYNE INTL	IN	LPV200	0	1	0	1	1	0.999824
GEZ	SHELBYVILLE MUNICIPAL	IN	LPV	0	1	0	1	1	0.999828
GGP	LOGANSPOUT/CASS COUNTY	IN	LPV200	0	1	0	1	1	0.999847
GSH	GOSHEN MUNICIPAL	IN	LPV	0	1	0	1	1	0.999840
GWB	DE KALB COUNTY	IN	LPV	0	1	0	1	1	0.999821
GYV	GARY/CHICAGO INTL	IN	LPV200	0	1	0	1	1	0.999870
HFY	GREENWOOD MUNICIPAL	IN	LPV	0	1	0	1	1	0.999836
HNB	HUNTINGBURG	IN	LPV	0	1	0	1	1	0.999847
HUF	TERRE HAUTE INTL-HULMAN FIELD	IN	LPV200	0	1	0	1	1	0.999859
I22	RANDOLPH COUNTY	IN	LPV	0	1	0	1	1	0.999817
IMS	MADISON MUNICIPAL	IN	LPV	0	1	0	1	1	0.999817
IND	INDIANAPOLIS INTL	IN	LPV	0	1	0	1	1	0.999840
JVY	CLARK RGNL	IN	LPV200	0	1	0	1	1	0.999821
LAF	PURDUE UNIVERSITY	IN	LPV	0	1	0	1	1	0.999855
MCX	WHITE COUNTY	IN	LP	0	1	0	1	1	0.999855
MIE	DELAWARE COUNTY-JOHNSON FIELD	IN	LPV	0	1	0	1	1	0.999824
MQJ	MOUNT COMFORT	IN	LPV	0	1	0	1	1	0.999836
MZZ	MARION MUNICIPAL	IN	LPV	0	1	0	1	1	0.999832
OKK	KOKOMO MUNICIPAL	IN	LPV200	0	1	0	1	1	0.999840
OVO	NORTH VERNON	IN	LPV	0	1	0	1	1	0.999821
OXI	STARKE COUNTY	IN	LPV	0	1	0	1	1	0.999855
PLD	PORTLAND MUNICIPAL	IN	LPV	0	1	0	1	1	0.999817
RCR	FULTON COUNTY	IN	LPV	0	1	0	1	1	0.999847
RID	RICHMOND MUNICIPAL	IN	LPV200	0	1	0	1	1	0.999809
RZL	JASPER COUNTY	IN	LPV	0	1	0	1	1	0.999866
SBN	SOUTH BEND RGNL	IN	LPV	0	1	0	1	1	0.999851
SER	FREEMAN MUNICIPAL	IN	LPV	0	1	0	1	1	0.999828
SMD	SMITH FIELD	IN	LPV	0	1	0	1	1	0.999821
TEL	PERRY COUNTY MUNICIPAL	IN	LP	0	1	0	1	1	0.999844
TYQ	INDIANAPOLIS EXECUTIVE	IN	LPV	0	1	0	1	1	0.999844

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
VPZ	PORTER COUNTY MUNICIPAL	IN	LPV	0	1	0	1	1	0.999863
3AU	AUGUSTA MUNICIPAL	KS	LP	0	1	0	1	0	1
3K3	SYRACUSE-HAMILTON COUNTY MUNICIPALCIPAL	KS	LPV	0	1	0	1	2	0.999836
AAO	COLONEL JAMES JABARA	KS	LPV	0	1	0	1	0	1
ADT	ATWOOD-RAWLINS COUNTY CITY-COUNTY	KS	LPV	0	1	0	1	2	0.999767
ANY	ANTHONY MUNICIPAL	KS	LP	0	1	0	1	6	0.999607
CBK	SHALZ FIELD	KS	LPV	0	1	0	1	2	0.999775
CNK	BLOSSER MUNICIPAL	KS	LP	0	1	0	1	0	1
DDC	DODGE CITY RGNL	KS	LPV	0	1	0	1	3	0.999748
EGT	WELLINGTON MUNICIPAL	KS	LPV	0	1	0	1	1	0.999989
EHA	ELKHART-MORTON COUNTY	KS	LPV	0	1	0	1	2	0.999878
EMP	EMPORIA MUNICIPAL	KS	LPV	0	1	0	1	0	1
EWK	NEWTON-CITY-COUNTY	KS	LPV	0	1	0	1	0	1
FOE	FORBES FIELD	KS	LPV	0	1	0	1	0	1
FSK	FORT SCOTT MUNICIPAL	KS	LPV	0	1	0	1	0	1
GBD	GREAT BEND MUNICIPAL	KS	LPV200	0	1	0	1	3	0.999756
GCK	GARDEN CITY RGNL	KS	LPV	0	1	0	1	3	0.999783
GLD	RENNER FLD/GOODLAND MUNICIPAL/	KS	LPV200	0	1	0	1	2	0.999802
HQG	HUGOTON MUNICIPAL	KS	LPV	0	1	0	1	3	0.999851
HUT	HUTCHINSON MUNICIPAL	KS	LPV	0	1	0	1	0	1
HYS	HAYS RGNL	KS	LPV200	0	1	0	1	2	0.999912
ICT	WICHITA MID-CONTINENT	KS	LPV200	0	1	0	1	0	1
IDP	INDEPENDENCE MUNICIPAL	KS	LPV	0	1	0	1	0	1
IXD	NEW CENTURY AIRCENTER	KS	LPV	0	1	0	1	0	1
K88	ALLEN COUNTY	KS	LPV	0	1	0	1	0	1
LBL	LIBERAL MID-AMERICA RGNL	KS	LPV	0	1	0	1	3	0.999844
LQR	LARNED PAWNEE CO	KS	LPV	0	1	0	1	4	0.999676
LWC	LAWRENCE MUNICIPAL	KS	LPV200	0	1	0	1	0	1
MHK	MANHATTAN RGNL	KS	LPV200	0	1	0	1	0	1
MPR	MCPHERSON	KS	LPV	0	1	0	1	0	1
MYZ	MARYSVILLE MUNICIPAL	KS	LPV	0	1	0	1	0	1
NRN	NORTON MUNICIPAL	KS	LPV	0	1	0	1	1	0.999992
OEL	OAKLEY MUNICIPAL	KS	LPV	0	1	0	1	3	0.999779
OJC	JOHNSON COUNTY EXECUTIVE	KS	LPV	0	1	0	1	0	1
OWI	OTTAWA MUNICIPAL	KS	LP	0	1	0	1	0	1
PPF	TRI-CITY	KS	LPV	0	1	0	1	0	1
PTS	ATKINSON MUNICIPAL	KS	LPV	0	1	0	1	0	1
PTT	PRATT INDUSTRIAL	KS	LPV	0	1	0	1	5	0.999657
RPB	BELLEVILLE MUNICIPAL	KS	LPV	0	1	0	1	0	1
RSL	RUSSELL MUNICIPAL	KS	LPV	0	1	0	1	1	0.999996
SLN	SALINA MUNICIPAL	KS	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
TOP	PHILIP BILLARD MUNICIPAL	KS	LPV200	0	1	0	1	0	1
TQK	SCOTT CITY MUNICIPAL	KS	LPV	0	1	0	1	3	0.999786
UKL	COFFEY COUNTY	KS	LPV	0	1	0	1	0	1
ULS	ULYSSES	KS	LPV	0	1	0	1	3	0.999836
27K	GEORGETOWN SCOTT CO-MARSHALL FLD	KY	LPV200	0	1	0	1	1	0.999794
2I0	MADISONVILLE MUNICIPAL	KY	LPV	0	1	0	1	1	0.999851
6I2	LEBANON-SPRINGFIELD	KY	LP	0	1	0	1	1	0.999809
7K4	OHIO COUNTY	KY	LPV	0	1	0	1	1	0.999840
AAS	TAYLOR COUNTY	KY	LP	0	1	0	1	1	0.999821
BRY	SAMUELS FIELD	KY	LPV	0	1	0	1	1	0.999809
BWG	BOWLING GREEN-WARREN CTY RGNL	KY	LPV	0	1	0	1	1	0.999832
BYL	WILLIAMSBURG-WHITLEY COUNTY	KY	LPV	0	1	0	1	1	0.999805
CEY	KYLE-OAKLEY FIELD	KY	LPV	0	1	0	1	1	0.999866
CPF	WENDELL H FORD	KY	LPV200	0	1	0	1	1	0.999790
CVG	CINCINNATI/NORTHERN KENTUCKY INTL	KY	LPV200	0	1	0	1	1	0.999802
DVK	STUART POWELL FIELD	KY	LPV	0	1	0	1	1	0.999805
DWU	ASHLAND RGNL	KY	LP	0	1	0	1	1	0.999767
EHR	HENDERSON CITY-COUNTY	KY	LPV	0	1	0	1	1	0.999863
EKX	ADDINGTON FIELD	KY	LPV	0	1	0	1	1	0.999821
FGX	FLEMING-MASON	KY	LPV	0	1	0	1	1	0.999783
GLW	GLASGOW MUNICIPAL	KY	LPV	0	1	0	1	1	0.999824
HVC	HOPKINSVILLE-CHRISTIAN COUNTY	KY	LPV	0	1	0	1	1	0.999847
I39	MADISON	KY	LPV200	0	1	0	1	1	0.999798
K22	BIG SANDY RGNL	KY	LPV	0	1	0	1	1	0.999779
KY8	HANCOCK CO-RON LEWIS FIELD	KY	LPV	0	1	0	1	1	0.999847
LEX	BLUE GRASS	KY	LPV	0	1	0	1	1	0.999798
LOU	BOWMAN FIELD	KY	LPV	0	1	0	1	1	0.999817
LOZ	LONDON-CORBIN ARPT-MAGEE FLD	KY	LPV	0	1	0	1	1	0.999802
M21	MUHLENBERG COUNTY	KY	LP	0	1	0	1	1	0.999847
M97	MOREHEAD-ROWAN COUNTY CLYDE A THOMAS RGNL	KY	LPV	0	1	0	1	1	0.999783
OWB	OWENSBORO-DAVISS COUNTY	KY	LPV200	0	1	0	1	1	0.999847
PAH	BARKLEY RGNL	KY	LPV	0	1	0	1	1	0.999878
SDF	LOUISVILLE INTL-STANDIFORD FLD	KY	LPV200	0	1	0	1	1	0.999817
SME	LAKE CUMBERLAND RGNL	KY	LPV	0	1	0	1	1	0.999809
TWT	STURGIS MUNICIPAL	KY	LPV	0	1	0	1	1	0.999863

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
TZV	TOMPKINSVILLE-MONROE COUNTY	KY	LPV	0	1	0	1	1	0.999824
1L0	ST JOHN THE BAPTIST PARISH	LA	LPV	0	1	0	1	1	0.999977
3R4	HART	LA	LPV	0	1	0	1	1	0.999947
ACP	ALLEN PARISH	LA	LPV	0	1	0	1	1	0.999901
AEX	ALEXANDRIA INTL	LA	LPV200	0	1	0	1	1	0.999916
ARA	ACADIANA RGNL	LA	LPV	0	1	0	1	1	0.999878
BQP	MOREHOUSE MEMORIAL	LA	LPV	0	1	0	1	1	0.999977
BTR	BATON ROUGE METRO	LA	LPV200	0	1	0	1	1	0.999950
BXA	GEORGE R CARR MEMORIAL AIR FIELD	LA	LPV	0	1	0	1	1	0.999992
CWF	CHENNAULT INTL	LA	LPV200	0	1	0	1	1	0.999935
DTN	SHREVEPORT DOWNTOWN	LA	LPV	0	1	0	1	1	0.999977
ESF	ESLER RGNL	LA	LPV200	0	1	0	1	1	0.999916
F88	JONESBORO	LA	LP	0	1	0	1	1	0.999954
GAO	SOUTH LAFOURCHE LEONARD MILLER JR	LA	LPV	0	1	0	1	1	0.999943
HDC	HAMMOND NORTHSORE RGNL	LA	LPV200	0	1	0	1	0	1
HUM	HOUMA-TERREBONNE	LA	LPV200	0	1	0	1	1	0.999863
HZR	FALSE RIVER RGNL	LA	LPV	0	1	0	1	1	0.999897
IER	NATCHITOCHEES RGNL	LA	LPV	0	1	0	1	1	0.999954
IYA	ABBEVILLE CHRIS CRUSTA MEML	LA	LPV	0	1	0	1	1	0.999878
L38	LOUISIANA RGNL	LA	LPV	0	1	0	1	1	0.999931
L39	LEESVILLE	LA	LPV	0	1	0	1	1	0.999939
LCH	LAKE CHARLES RGNL	LA	LPV200	0	1	0	1	1	0.999931
LFT	LAFAYETTE RGNL	LA	LPV	0	1	0	1	1	0.999878
M79	JOHN H HOOKS JR MEMORIAL	LA	LPV	0	1	0	1	1	0.999977
MLU	MONROE RGNL	LA	LPV200	0	1	0	1	1	0.999985
MSY	LOUIS ARMSTRONG NEW ORLEANS INTL	LA	LPV200	0	1	0	1	1	0.999996
NEW	LAKEFRONT	LA	LPV	0	1	0	1	0	1
OPL	ST LANDRY PARISH-AHART FIELD	LA	LPV	0	1	0	1	1	0.999889
PTN	HARRY P WILLIAMS MEMORIAL	LA	LPV200	0	1	0	1	1	0.999870
RSN	RUSTON RGNL AIRPORT	LA	LPV	0	1	0	1	1	0.999996
SHV	SHREVEPORT RGNL	LA	LPV200	0	1	0	1	1	0.999977
SPH	SPRINGHILL	LA	LPV	0	1	0	1	1	0.999989
TVR	VICKSBURG TALLULAH RGNL	LA	LPV	0	1	0	1	1	0.999969
UXL	SOUTHLAND FIELD	LA	LPV	0	1	0	1	1	0.999935
3B0	SOUTHBRIDGE MUNICIPAL	MA	LPV	0	1	1	0.999878	1	0.999615
ACK	NANTUCKET MEMORIAL	MA	LPV200	0	1	1	0.999855	1	0.999622

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
BAF	BARNES MUNICIPAL	MA	LPV	0	1	1	0.999886	1	0.999611
BED	LAURENCE G HANSCOM FLD	MA	LPV200	0	1	1	0.999859	1	0.999599
BOS	GEN EDWARD LAWRENCE LOGAN INTL	MA	LPV200	0	1	1	0.999859	1	0.999599
BVY	BEVERLY MUNICIPAL	MA	LPV	0	1	1	0.999859	1	0.999596
EWB	NEW BEDFORD RGNL	MA	LP	0	1	1	0.999866	1	0.999618
GBR	WALTER J KOLADZA	MA	LP	0	1	1	0.999889	1	0.999618
HYA	BARNSTABLE MUNICIPAL-BOARDMAN/POLANDO FIELD	MA	LPV200	0	1	1	0.999855	1	0.999615
LWM	LAWRENCE MUNICIPAL	MA	LPV200	0	1	1	0.999859	1	0.999592
MVY	MARTHAS VINEYARD	MA	LPV200	0	1	1	0.999859	1	0.999622
ORE	ORANGE MUNICIPAL	MA	LPV	0	1	1	0.999874	1	0.999603
ORH	WORCESTER RGNL	MA	LPV200	0	1	1	0.999874	1	0.999607
OWD	NORWOOD MEMORIAL	MA	LPV	0	1	1	0.999863	1	0.999607
PYM	PLYMOUTH MUNICIPAL	MA	LPV200	0	1	1	0.999859	1	0.999607
2G4	GARRETT COUNTY	MD	LPV	0	1	0	1	1	0.999714
2W6	ST. MARY'S COUNTY RGNL	MD	LPV	1	0.999882	1	0.999870	2	0.999458
BWI	BALTIMORE/WASHINGTON INTL THURGOOD MARSHALL	MD	LPV200	0	1	0	1	2	0.999569
CBE	GREATER CUMBERLAND RGNL	MD	LP	0	1	0	1	1	0.999714
DMW	CARROLL COUNTY REGNL/JACK B POAGE FIELD	MD	LPV200	0	1	0	1	1	0.999699
ESN	EASTON/NEWNAM FIELD	MD	LPV	1	0.999943	1	0.999939	2	0.999531
FDK	FREDERICK MUNICIPAL	MD	LPV	0	1	0	1	1	0.999706
GAI	MONTGOMERY COUNTY AIRPARK	MD	LPV	0	1	0	1	2	0.999588
HGR	HAGERSTOWN RGNL-RICHARD A HENSON FIELD	MD	LPV200	0	1	0	1	1	0.999699
MTN	MARTIN STATE	MD	LPV	0	1	0	1	2	0.999664
OXB	OCEAN CITY MUNICIPAL	MD	LPV	1	0.999744	1	0.999744	2	0.999401
SBY	SALISBURY-OCEAN CITY WICOMICO RGNL	MD	LPV200	1	0.999775	1	0.999741	2	0.999405
1B0	DEXTER RGNL	ME	LP	0	1	1	0.999813	1	0.999573
81B	OXFORD COUNTY RGNL	ME	LP	0	1	1	0.999832	1	0.999599
AUG	AUGUSTA STATE	ME	LPV200	0	1	1	0.999828	1	0.999584
BGR	BANGOR INTL	ME	LPV	0	1	1	0.999809	1	0.999569
BHB	HANCOCK COUNTY-BAR HARBOR	ME	LPV200	0	1	1	0.999813	1	0.999565
BXM	BRUNSWICK EXECUTIVE	ME	LPV	0	1	1	0.999836	1	0.999592
FVE	NORTHERN AROOSTOOK RGNL	ME	LPV	0	1	1	0.999790	2	0.999531
HUL	HOULTON INTL	ME	LP	0	1	1	0.999798	1	0.999550
LEW	AUBURN/LEWISTON MUNICIPAL	ME	LPV200	0	1	1	0.999836	1	0.999596
MLT	MILLINOCKET MUNICIPAL	ME	LPV	0	1	1	0.999805	1	0.999561
PQI	NORTHERN MAINE RGNL ARPT	ME	LPV200	0	1	1	0.999794	2	0.999554

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
	AT PRESQUE IS								
PWM	PORTLAND INTL JETPORT	ME	LPV200	0	1	1	0.999844	1	0.999561
RKD	KNOX COUNTY RGNL	ME	LPV	0	1	1	0.999824	1	0.999580
SFM	SANFORD RGNL	ME	LPV200	0	1	1	0.999851	1	0.999569
WVL	WATERVILLE ROBERT LAFLEUR	ME	LPV200	0	1	1	0.999824	1	0.999584
77G	MARLETTE	MI	LPV	0	1	0	1	1	0.999794
9D9	HASTINGS	MI	LP	0	1	0	1	1	0.999836
ACB	ANTRIM COUNTY	MI	LPV	0	1	1	0.999962	1	0.999817
ADG	LENAWEE COUNTY	MI	LPV	0	1	0	1	1	0.999809
AMN	GRATIOT COMMUNICIPALTY	MI	LPV	0	1	0	1	1	0.999824
ANJ	SAULT STE MARIE MUNICIPAL - SANDERSON FIELD	MI	LPV	0	1	1	0.999935	2	0.999596
APN	ALPENA COUNTY RGNL	MI	LPV	0	1	1	0.999935	1	0.999790
ARB	ANN ARBOR MUNICIPAL	MI	LPV	0	1	0	1	1	0.999805
AZO	KALAMAZOO/BATTLE CREEK INTL	MI	LPV	0	1	0	1	1	0.999836
BAX	HURON COUNTY MEMORIAL	MI	LPV	0	1	0	1	1	0.999794
BEH	SOUTHWEST MICHIGAN RGNL	MI	LPV200	0	1	0	1	1	0.999851
BIV	TULIP CITY	MI	LPV	0	1	0	1	1	0.999851
BTL	W K KELLOGG	MI	LPV200	0	1	0	1	1	0.999828
CAD	WEXFORD COUNTY	MI	LPV200	0	1	0	1	1	0.999836
CIU	CHIPPEWA COUNTY INTL	MI	LPV	0	1	1	0.999935	1	0.999695
CMX	HOUGHTON COUNTY MEMORIAL	MI	LPV	1	0.999710	1	0.999710	4	0.999378
CVX	CHARLEVOIX MUNICIPAL	MI	LPV	0	1	1	0.999962	1	0.999813
DET	COLEMAN A YOUNG MUNICIPAL	MI	LPV	0	1	0	1	1	0.999786
DTW	DETROIT METROPOLITAN WAYNE COUNTY	MI	LPV200	0	1	0	1	1	0.999790
ERY	LUCE COUNTY	MI	LPV	0	1	1	0.999950	2	0.999523
ESC	DELTA COUNTY	MI	LPV200	0	1	1	0.999992	3	0.999821
FFX	FREMONT MUNICIPAL	MI	LPV	0	1	0	1	1	0.999855
FNT	BISHOP INTL	MI	LPV200	0	1	0	1	1	0.999805
GDW	GLADWIN ZETTEL MEMORIAL	MI	LP	0	1	0	1	1	0.999824
GLR	GAYLORD RGNL	MI	LPV	0	1	1	0.999954	1	0.999809
GRR	GERALD R. FORD INTL	MI	LPV200	0	1	0	1	1	0.999840
HYX	SAGINAW COUNTY H.W. BROWNE	MI	LPV	0	1	0	1	1	0.999809
IKW	JACK BARSTOW	MI	LPV	0	1	0	1	1	0.999817
IMT	FORD	MI	LPV	0	1	0	1	3	0.999592
IRS	KIRSCH MUNICIPAL	MI	LPV	0	1	0	1	1	0.999832
ISQ	SCHOOLCRAFT COUNTY	MI	LP	0	1	1	0.999973	2	0.999779
IWD	GOGEBIC-IRON COUNTY	MI	LPV200	1	0.999741	1	0.999710	4	0.999367

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
JXN	JACKSON COUNTY-REYNOLDS FIELD	MI	LPV200	0	1	0	1	1	0.999817
LAN	CAPITAL REGION INTL	MI	LPV200	0	1	0	1	1	0.999821
LDM	MASON COUNTY	MI	LPV	0	1	0	1	1	0.999866
LWA	SOUTH HAVEN AREA RGNL	MI	LP	0	1	0	1	1	0.999851
MBS	MBS INTL	MI	LPV200	0	1	0	1	1	0.999813
MCD	MACKINAC ISLAND	MI	LPV	0	1	1	0.999943	1	0.999786
MKG	MUSKEGON COUNTY	MI	LPV200	0	1	0	1	1	0.999855
MNM	MENOMINEE-MARINETTE TWIN COUNTY	MI	LPV200	0	1	0	1	2	0.999817
MOP	MOUNT PLEASANT MUNICIPAL	MI	LPV	0	1	0	1	1	0.999828
N98	BOYNE CITY MUNICIPAL	MI	LP	0	1	1	0.999954	1	0.999809
OEB	BRANCH COUNTY MEMORIAL	MI	LPV	0	1	0	1	1	0.999824
OSC	OSCODA-WURTSMITH	MI	LPV200	0	1	1	0.999958	1	0.999798
OZW	LIVINGSTON COUNTY SPENCER J. HARDY	MI	LPV200	0	1	0	1	1	0.999805
PHN	SAINT CLAIR COUNTY INTL	MI	LPV200	0	1	0	1	1	0.999783
PLN	PELLSTON RGNL AIRPORT OF EMMET COUNTY	MI	LPV200	0	1	1	0.999947	1	0.999794
PTK	OAKLAND COUNTY INTL	MI	LPV200	0	1	0	1	1	0.999798
RNP	OWOSSO COMMUNICIPALTY	MI	LPV	0	1	0	1	1	0.999813
SAW	SAWYER INTL	MI	LPV200	0	1	2	0.999989	2	0.999370
SLH	CHEBOYGAN COUNTY	MI	LPV	0	1	1	0.999943	1	0.999794
TTF	CUSTER	MI	LPV	0	1	0	1	1	0.999798
TVC	CHERRY CAPITAL	MI	LPV	0	1	0	1	1	0.999836
YIP	WILLOW RUN	MI	LPV	0	1	0	1	1	0.999794
AEL	ALBERT LEA MUNICIPAL	MN	LPV	0	1	1	0.999706	2	0.999699
ANE	ANOKA COUNTY-BLAINE ARPT (JANES FIELD)	MN	LPV	1	0.999710	1	0.999683	2	0.999584
AUM	AUSTIN MUNICIPAL	MN	LPV200	0	1	2	0.999832	2	0.999687
AXN	CHANDLER FIELD	MN	LPV	1	0.999664	1	0.999596	3	0.999225
BBB	BENSON MUNICIPAL	MN	LPV	1	0.999653	1	0.999599	2	0.999580
BDE	BAUDETTE INTL	MN	LPV	1	0.999050	1	0.999012	1	0.998790
BDH	WILLMAR MUNICIPAL-JOHN L RICE FIELD	MN	LPV	1	0.999706	1	0.999657	2	0.999592
BJI	BEMIDJI RGNL	MN	LPV200	1	0.999233	1	0.999035	2	0.998829
BRD	BRAINERD LAKES RGNL	MN	LPV200	1	0.999641	1	0.999596	3	0.998996
CBG	CAMBRIDGE MUNICIPAL	MN	LPV	1	0.999699	1	0.999687	2	0.999580
CKC	GRAND MARAIS/COOK COUNTY	MN	LPV	1	0.999710	1	0.999554	4	0.998687
CKN	CROOKSTON MUNICIPAL/KIRKWOOD FLD	MN	LPV	1	0.999050	1	0.999035	1	0.998882
CNB	MYERS FIELD	MN	LPV	1	0.999706	1	0.999599	2	0.999576
COQ	CLOQUET CARLTON COUNTY	MN	LPV	1	0.999672	1	0.999565	4	0.998813

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
CQM	COOK MUNICIPAL	MN	LP	2	0.999596	2	0.999374	4	0.998695
D39	SAUK CENTRE MUNICIPAL	MN	LP	1	0.999668	1	0.999599	3	0.999462
DLH	DULUTH INTL	MN	LPV200	1	0.999710	1	0.999599	4	0.998844
DTL	DETROIT LAKES-WETHING FIELD	MN	LPV	2	0.999420	2	0.999191	1	0.998924
DXX	LAC QUI PARLE COUNTY	MN	LPV200	1	0.999706	1	0.999599	2	0.999576
ELO	ELY MUNICIPAL	MN	LPV200	1	0.999641	1	0.999454	4	0.998760
ETH	WHEATON MUNICIPAL	MN	LP	1	0.999638	1	0.999596	3	0.999252
FCM	FLYING CLOUD	MN	LPV200	1	0.999817	1	0.999706	2	0.999588
FFM	FERGUS FALLS MUNICIPAL-EINAR MICKELSON FLD	MN	LPV200	1	0.999638	2	0.999554	2	0.998985
FKA	FILLMORE COUNTY	MN	LPV	0	1	2	0.999851	2	0.999676
FOZ	BIGFORK MUNICIPALCIPAL	MN	LP	2	0.999367	2	0.999168	4	0.998779
FRM	FAIRMONT MUNICIPAL	MN	LPV	1	0.999939	1	0.999706	1	0.999706
FSE	FOSSTON MUNICIPAL	MN	LP	1	0.999153	1	0.999035	1	0.998871
GPZ	GRAND RAPIDS/ITASCA CO-GORDON NEWSTROM	MN	LPV	2	0.999580	3	0.999523	4	0.998855
HCD	HUTCHINSON MUNICIPAL-BUTLER FIELD	MN	LPV	1	0.999710	1	0.999664	1	0.999596
HIB	RANGE RGNL	MN	LPV200	2	0.999626	1	0.999435	4	0.998787
INL	FALLS INTL	MN	LPV	2	0.999237	2	0.999138	3	0.998756
JKJ	MOORHEAD MUNICIPAL	MN	LPV	2	0.999393	1	0.999046	2	0.998951
LJF	LITCHFIELD MUNICIPAL	MN	LPV	1	0.999706	1	0.999664	1	0.999596
LVN	AIRLAKE	MN	LPV200	1	0.999836	1	0.999706	2	0.999622
LXL	LITTLE FALLS/MORRISON CO-LINDBERGH FLD	MN	LPV	1	0.999679	1	0.999599	3	0.999267
LYV	QUENTIN AANENSON FIELD	MN	LPV200	1	0.999710	1	0.999634	2	0.999584
MGG	MAPLE LAKE MUNICIPAL	MN	LP	1	0.999706	1	0.999672	2	0.999592
MKT	MANKATO RGNL	MN	LPV200	2	0.999882	1	0.999706	1	0.999638
MML	SOUTHWEST MINNESOTA RGNL MARSHALL/RYAN FIELD	MN	LPV200	1	0.999706	1	0.999638	2	0.999584
MSP	MINNEAPOLIS-ST PAUL INTL/WOLD-CHAMBERLAIN	MN	LPV200	1	0.999817	1	0.999802	2	0.999588
MZH	MOOSE LAKE CARLTON COUNTY	MN	LPV	1	0.999702	1	0.999634	5	0.999145
ONA	WINONA MUNICIPAL-MAX CONRAD FLD	MN	LPV	0	1	1	0.999863	2	0.999657
ORB	ORR RGNL	MN	LP	2	0.999447	2	0.999264	4	0.998703
OTG	WORTHINGTON MUNICIPAL	MN	LPV200	1	0.999718	1	0.999706	2	0.999611
OWA	OWATONNA DEGNER RNGL	MN	LPV200	2	0.999989	1	0.999706	2	0.999660
PKD	PARK RAPIDS MUNICIPAL-KONSHOK FIELD	MN	LPV200	2	0.999420	2	0.999195	1	0.998977
RGK	RED WING RGNL	MN	LPV200	1	0.999882	1	0.999817	2	0.999657
ROS	RUSH CITY RGNL	MN	LPV	1	0.999695	1	0.999695	3	0.999550
ROX	ROSEAU MUNICIPAL/RUDY	MN	LPV	1	0.999046	1	0.999012	1	0.998768

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
	BILLBERG FIELD								
RRT	WARROAD INTL MEMORIAL	MN	LPV	1	0.999046	1	0.999012	1	0.998752
RST	ROCHESTER INTL	MN	LPV200	0	1	2	0.999844	2	0.999649
RWF	REDWOOD FALLS MUNICIPAL	MN	LPV	1	0.999710	1	0.999706	2	0.999596
SAZ	STAPLES MUNICIPAL	MN	LPV	1	0.999641	1	0.999596	1	0.999012
STC	ST CLOUD RGNL	MN	LPV200	1	0.999679	1	0.999676	2	0.999592
STP	ST PAUL DOWNTOWN HOLMAN FLD	MN	LPV	1	0.999817	1	0.999805	2	0.999580
TVF	THIEF RIVER FALLS	MN	LPV	1	0.999050	1	0.999035	1	0.998871
TWM	RICHARD B HELGESON	MN	LPV	1	0.999710	1	0.999599	4	0.998836
VVV	ORTONVILLE MUNICIPAL-MARTINSON FIELD	MN	LP	1	0.999645	1	0.999596	3	0.999538
1H0	CREVE COEUR	MO	LPV	0	1	0	1	1	0.999924
2H2	JERRY SUMNERS SR AURORA MUNICIPALCIPAL	MO	LP	0	1	0	1	0	1
6M6	LEWIS COUNTY RGNL	MO	LPV	0	1	0	1	1	0.999958
8WC	WASHINGTON COUNTY AIRPORT	MO	LPV	0	1	0	1	1	0.999931
AIZ	LEE C FINE MEMORIAL	MO	LPV	0	1	0	1	1	0.999973
BBG	BRANSON	MO	LPV200	0	1	0	1	1	0.999992
BUM	BUTLER MEMORIAL	MO	LPV	0	1	0	1	0	1
CGI	CAPE GIRARDEAU RGNL	MO	LPV	0	1	0	1	1	0.999901
CHT	CHILLICOTHE MUNICIPAL	MO	LPV	0	1	0	1	1	0.999996
COU	COLUMBIA RGNL	MO	LPV	0	1	0	1	1	0.999966
DMO	SEDALIA MEMORIAL	MO	LPV	0	1	0	1	1	0.999992
DXE	DEXTER MUNICIPAL	MO	LPV	0	1	0	1	1	0.999908
EIW	COUNTY MEMORIAL	MO	LPV	0	1	0	1	1	0.999893
EOS	NEOSHO HUGH ROBINSON	MO	LPV	0	1	0	1	0	1
EVU	NORTHWEST MISSOURI RGNL	MO	LPV	0	1	0	1	0	1
EZZ	CAMERON MEMORIAL	MO	LPV	0	1	0	1	0	1
FAM	FARMINGTON RGNL	MO	LPV	0	1	0	1	1	0.999924
FTT	ELTON HENSLEY MEMORIAL	MO	LPV	0	1	0	1	1	0.999962
FWB	BRANSON WEST MUNICIPAL-EMERSON FIELD	MO	LPV200	0	1	0	1	1	0.999996
FYG	WASHINGTON RGNL	MO	LPV	0	1	0	1	1	0.999939
GPH	MIDWEST NATIONAL AIR CENTER	MO	LPV	0	1	0	1	0	1
H21	CAMDENTON MEMORIAL	MO	LPV	0	1	0	1	1	0.999977
H79	ELDON MODEL AIRPARK	MO	LP	0	1	0	1	1	0.999977
HAE	HANNIBAL RGNL	MO	LPV	0	1	0	1	1	0.999947
HFJ	MONETT MUNICIPAL	MO	LPV	0	1	0	1	0	1
HIG	HIGGINSVILLE INDUSTRIAL MUNICIPAL	MO	LPV	0	1	0	1	0	1
IRK	KIRKSVILLE RGNL	MO	LPV200	0	1	0	1	1	0.999973

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
JEF	JEFFERSON CITY MEMORIAL	MO	LPV	0	1	0	1	1	0.999966
JLN	JOPLIN RGNL	MO	LPV	0	1	0	1	0	1
K02	PERRYVILLE MUNICIPAL	MO	LPV	0	1	0	1	1	0.999908
K57	GOULD PETERSON MUNICIPAL	MO	LPV	0	1	0	1	0	1
LRY	LAWRENCE SMITH MEMORIAL	MO	LPV	0	1	0	1	0	1
LXT	LEE'S SUMMIT MUNICIPAL	MO	LPV	0	1	0	1	0	1
M05	CARUTHERSVILLE MEM	MO	LPV	0	1	0	1	1	0.999893
M17	BOLIVAR MUNICIPAL	MO	LPV	0	1	0	1	1	0.999996
M48	HOUSTON MEMORIAL	MO	LPV	0	1	0	1	1	0.999958
MAW	MALDEN MUNICIPAL	MO	LPV	0	1	0	1	1	0.999905
MBY	OMAR N BRADLEY	MO	LPV	0	1	0	1	1	0.999973
MCI	KANSAS CITY INTL	MO	LPV	0	1	0	1	0	1
MHL	MARSHALL MEML MUNICIPAL	MO	LPV	0	1	0	1	1	0.999992
MKC	CHARLES B. WHEELER DOWNTOWN	MO	LPV200	0	1	0	1	0	1
MO8	NORTH CENTRAL MISSOURI RGNL	MO	LPV	0	1	0	1	1	0.999985
MYJ	MEXICO MEMORIAL	MO	LPV	0	1	0	1	1	0.999958
NVD	NEVADA MUNICIPAL	MO	LPV200	0	1	0	1	0	1
PLK	M. GRAHAM CLARK DOWNTOWN	MO	LPV200	0	1	0	1	1	0.999996
POF	POPLAR BLUFF MUNICIPAL	MO	LPV	0	1	0	1	1	0.999916
RCM	SKYHAVEN	MO	LPV	0	1	0	1	0	1
SGF	SPRINGFIELD-BRANSON NATIONAL	MO	LPV	0	1	0	1	1	0.999996
SIK	SIKESTON MEML MUNICIPAL	MO	LPV	0	1	0	1	1	0.999897
STJ	ROSECRANS MEMORIAL	MO	LPV200	0	1	0	1	0	1
STL	LAMBERT-ST LOUIS INTL	MO	LPV200	0	1	0	1	1	0.999924
SUS	SPIRIT OF ST LOUIS	MO	LPV200	0	1	0	1	1	0.999928
TBN	WAYNESVILLE-ST ROBERT RGNL/FORNEY AAF	MO	LPV	0	1	0	1	1	0.999966
TRX	TRENTON MUNICIPAL	MO	LPV	0	1	0	1	1	0.999996
UBX	CUBA MUNICIPAL	MO	LPV	0	1	0	1	1	0.999947
UNO	WEST PLAINS MUNICIPAL	MO	LPV	0	1	0	1	1	0.999954
UUV	SULLIVAN RGNL	MO	LPV	0	1	0	1	1	0.999943
VER	JESSE VIERTEL MEMORIAL	MO	LPV	0	1	0	1	1	0.999977
VIH	ROLLA NATIONAL	MO	LPV200	0	1	0	1	1	0.999958
87I	YAZOO COUNTY	MS	LPV	0	1	0	1	1	0.999939
CKM	FLETCHER FIELD	MS	LPV	0	1	0	1	1	0.999908
CRX	ROSCOE TURNER	MS	LPV200	0	1	0	1	1	0.999874
GLH	MID DELTA RGNL	MS	LPV200	0	1	0	1	1	0.999935
GNF	GRENADA MUNICIPAL	MS	LPV	0	1	0	1	1	0.999901
GPT	GULFPORT-BILOXI INTL	MS	LPV200	0	1	0	1	1	0.999977
GTR	GOLDEN TRIANGLE RGNL	MS	LPV200	0	1	0	1	1	0.999901

Airport Id	Airport Name	State/Provence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
GWO	GREENWOOD-LEFLORE	MS	LPV	0	1	0	1	1	0.999905
HBG	HATTIESBURG BOBBY L. CHAIN MUNICIPAL	MS	LPV200	0	1	0	1	1	0.999969
HEZ	HARDY-ANDERS FLD NATCHEZ-ADAMS COUNTY	MS	LPV	0	1	0	1	0	1
HKS	HAWKINS FIELD	MS	LPV200	0	1	0	1	1	0.999958
HSA	STENNIS INTL	MS	LPV200	0	1	0	1	1	0.999989
IDL	INDIANOLA MUNICIPAL	MS	LPV	0	1	0	1	1	0.999920
JAN	JACKSON-EVERS INTL	MS	LPV200	0	1	0	1	1	0.999954
JVW	JOHN BELL WILLIAMS	MS	LPV200	0	1	0	1	1	0.999958
LUL	HESLER-NOBLE FIELD	MS	LPV	0	1	0	1	1	0.999962
M40	MONROE COUNTY	MS	LPV	0	1	0	1	1	0.999886
M43	PRENTISS-JEFFERSON DAVIS COUNTY	MS	LPV	0	1	0	1	1	0.999981
MCB	MC COMB-PIKE COUNTY-JOHN E LEWIS FIELD	MS	LPV	0	1	0	1	0	1
MEI	KEY FIELD	MS	LPV200	0	1	0	1	1	0.999928
MJD	PICAYUNE MUNICIPAL	MS	LPV	0	1	0	1	1	0.999992
MPE	PHILADELPHIA MUNICIPAL	MS	LPV	0	1	0	1	1	0.999916
OLV	OLIVE BRANCH	MS	LPV	0	1	0	1	1	0.999897
PIB	HATTIESBURG-LAUREL RGNL	MS	LPV200	0	1	0	1	1	0.999969
PQL	TRENT LOTT INTL	MS	LPV200	0	1	0	1	1	0.999962
RNV	CLEVELAND MUNICIPAL	MS	LPV	0	1	0	1	1	0.999920
STF	GEORGE M BRYAN	MS	LPV200	0	1	0	1	1	0.999901
TUP	TUPELO RGNL	MS	LPV200	0	1	0	1	1	0.999882
UOX	UNIVERSITY-OXFORD	MS	LPV	0	1	0	1	1	0.999893
UTA	TUNICA MUNICIPAL	MS	LPV200	0	1	0	1	1	0.999905
1S3	TILLITT FIELD	MT	LPV	1	0.999679	1	0.999679	3	0.999397
4U6	CIRCLE TOWN COUNTY	MT	LPV	1	0.999618	1	0.999412	4	0.998829
6S8	LAUREL MUNICIPALCIPAL	MT	LPV	0	1	1	0.999783	3	0.999641
7S0	RONAN	MT	LPV	0	1	1	0.999733	4	0.999546
BIL	BILLINGS LOGAN INTL	MT	LPV200	1	0.999977	1	0.999702	3	0.999588
BTM	BERT MOONEY	MT	LPV	0	1	0	1	2	0.999886
BZN	GALLATIN FIELD	MT	LPV	0	1	0	1	1	0.999756
GDV	DAWSON COMMUNICIPALTY	MT	LPV	1	0.999607	1	0.999416	4	0.998977
GGW	WOKAL FIELD/GLASGOW INTL	MT	LPV200	1	0.999580	1	0.999386	3	0.998657
GPI	GLACIER PARK INTL	MT	LPV	1	0.999931	1	0.999676	4	0.999306
GTF	GREAT FALLS INTL	MT	LPV200	1	0.999748	1	0.999618	4	0.999344
HLN	HELENA RGNL	MT	LPV	0	1	1	0.999840	3	0.999687
HVR	HAVRE CITY-COUNTY	MT	LPV	1	0.999626	1	0.999489	3	0.998928
LVM	MISSION FIELD	MT	LP	0	1	0	1	2	0.999679
LWT	LEWISTOWN MUNICIPAL	MT	LPV200	1	0.999748	1	0.999638	4	0.999298
M75	MALTA	MT	LP	1	0.999592	1	0.999443	3	0.998684
MLS	FRANK WILEY FIELD	MT	LPV	1	0.999679	1	0.999615	3	0.999286

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
MSO	MISSOULA INTL	MT	LPV	0	1	1	0.999859	3	0.999676
OLF	L M CLAYTON	MT	LPV200	1	0.999588	1	0.999336	3	0.998615
PWD	SHER-WOOD	MT	LPV200	1	0.999119	2	0.999065	3	0.998603
RPX	ROUNDUP	MT	LPV	1	0.999748	1	0.999679	3	0.999477
SBX	SHELBY	MT	LP	1	0.999679	1	0.999561	4	0.999187
SDY	SIDNEY-RICHLAND MUNICIPAL	MT	LPV	1	0.999557	1	0.999153	4	0.998771
WYS	YELLOWSTONE	MT	LPV200	0	1	0	1	0	1
CYCL	CHARLO	NB	LPV	0	1	1	0.999767	3	0.999412
CYQM	MONCTON INTL	NB	LPV	0	1	1	0.999763	3	0.999428
AFP	ANSON COUNTY-JEFF CLOUD FLD	NC	LPV	0	1	0	1	1	0.999828
AKH	GASTONIA MUNICIPAL	NC	LPV	0	1	0	1	1	0.999836
AVL	ASHEVILLE RGNL	NC	LPV	0	1	0	1	1	0.999836
BUY	BURLINGTON-ALAMANCE RGNL	NC	LPV200	0	1	0	1	1	0.999805
CLT	CHARLOTTE/DOUGLAS INTL	NC	LPV200	0	1	0	1	1	0.999828
CTZ	CLINTON-SAMPSON COUNTY	NC	LPV200	0	1	0	1	2	0.999500
DPL	DUPLIN COUNTY	NC	LPV200	0	1	0	1	2	0.999496
ECG	ELIZABETH CITY CG AIR STATION/RGNL	NC	LPV	1	0.999687	1	0.999687	2	0.999454
EDE	NORTHEASTERN RGNL	NC	LPV200	2	0.999924	1	0.999676	2	0.999462
EHO	SHELBY-CLEVELAND COUNTY RGNL	NC	LPV	0	1	0	1	1	0.999840
EQY	MONROE RGNL	NC	LPV	0	1	0	1	1	0.999832
EWN	COASTAL CAROLINA RGNL	NC	LPV	1	0.999989	1	0.999676	2	0.999489
EXX	DAVIDSON COUNTY	NC	LPV	0	1	0	1	1	0.999817
EYF	CURTIS L BROWN JR FIELD	NC	LPV200	0	1	0	1	2	0.999691
FAY	FAYETTEVILLE RGNL/GRANNIS FIELD	NC	LPV200	0	1	0	1	2	0.999699
FQD	RUTHERFORD CO/MARCHMAN FIELD	NC	LPV	0	1	0	1	1	0.999832
GSO	PIEDMONT TRIAD INTL	NC	LPV200	0	1	0	1	1	0.999805
GWV	WAYNE EXECUTIVE JETPORT	NC	LPV200	0	1	0	1	2	0.999485
HKY	HICKORY RGNL	NC	LPV200	0	1	0	1	1	0.999824
HNZ	HENDERSON-OXFORD	NC	LPV	0	1	0	1	3	0.999783
HRJ	HARNETT COUNTY	NC	LPV	0	1	0	1	2	0.999687
ILM	WILMINGTON INTL	NC	LPV200	0	1	1	0.999836	2	0.999512
INT	SMITH REYNOLDS	NC	LPV200	0	1	0	1	1	0.999805
IPJ	LINCOLN-TON-LINCOLN COUNTY RGNL	NC	LPV	0	1	0	1	1	0.999832
ISO	KINSTON REGL JETPORT AT STALLINGS FLD	NC	LPV	0	1	1	0.999798	2	0.999489
IXA	HALIFAX-NORTHAMPTON RGNL	NC	LPV200	1	0.999962	1	0.999962	2	0.999466
JNX	JOHNSTON COUNTY	NC	LPV200	0	1	0	1	2	0.999485

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
JQF	CONCORD RGNL	NC	LPV	0	1	0	1	1	0.999828
LBT	LUMBERTON MUNICIPAL	NC	LPV	0	1	0	1	2	0.999714
LHZ	TRIANGLE NORTH EXECUTIVE	NC	LPV200	1	0.999996	1	0.999996	2	0.999500
MEB	LAURINBURG-MAXTON	NC	LPV200	0	1	0	1	2	0.999821
MQI	DARE COUNTY RGNL	NC	LPV	1	0.999683	1	0.999679	2	0.999451
MRH	MICHAEL J. SMITH FIELD	NC	LPV	1	0.999954	1	0.999676	2	0.999489
MRN	FOOTHILLS RGNL	NC	LPV200	0	1	0	1	1	0.999824
MWK	MOUNT AIRY/SURRY COUNTY	NC	LPV	0	1	0	1	1	0.999798
OAJ	ALBERT J ELLIS	NC	LPV200	0	1	1	0.999783	2	0.999500
OCW	WARREN FIELD	NC	LPV	1	0.999977	1	0.999676	2	0.999477
ONX	CURRITUCK COUNTY RGNL	NC	LPV	1	0.999691	1	0.999691	2	0.999451
PGV	PITT-GREENVILLE	NC	LPV	1	0.999996	1	0.999676	2	0.999477
PMZ	PLYMOUTH MUNICIPAL	NC	LP	1	0.999954	1	0.999676	2	0.999466
RCZ	RICHMOND COUNTY	NC	LPV	0	1	0	1	1	0.999828
RDU	RALEIGH-DURHAM INTL	NC	LPV200	0	1	0	1	2	0.999733
RUQ	ROWAN COUNTY	NC	LPV200	0	1	0	1	1	0.999817
RWI	ROCKY MOUNT-WILSON RGNL	NC	LPV	1	0.999985	1	0.999985	2	0.999477
SOP	MOORE COUNTY	NC	LPV	0	1	0	1	1	0.999821
SUT	CAPE FEAR RGNL JETPORT/HOWIE FRANKLIN FLD	NC	LPV	0	1	0	1	2	0.999519
SVH	STATESVILLE RGNL	NC	LPV	0	1	0	1	1	0.999817
TDF	PERSON COUNTY	NC	LPV200	0	1	0	1	1	0.999802
TTA	RALEIGH EXEC AT SANFORD- LEE COUNTY	NC	LPV200	0	1	0	1	1	0.999817
VUJ	STANLY COUNTY	NC	LPV200	0	1	0	1	1	0.999821
2C8	CAVALIER MUNICIPAL	ND	LPV	1	0.999054	1	0.998985	1	0.998699
5N8	CASSELTON ROBERT MILLER RGNL	ND	LPV	1	0.999138	1	0.999061	2	0.998893
BAC	BARNES COUNTY MUNICIPAL	ND	LPV	1	0.999157	1	0.999080	2	0.998882
BIS	BISMARCK MUNICIPAL	ND	LPV200	2	0.999370	1	0.999233	2	0.999038
BWP	HARRY STERN	ND	LPV	1	0.999638	2	0.999546	2	0.998977
D09	BOTTINEAU MUNICIPAL	ND	LPV	1	0.999084	1	0.999080	2	0.998653
D55	ROBERTSON FIELD	ND	LPV	1	0.999058	1	0.998989	1	0.998691
D60	TIOGA MUNICIPAL	ND	LPV	1	0.999119	1	0.999084	4	0.998748
DIK	DICKINSON-THEODORE ROOSEVELT RGNL	ND	LPV200	2	0.999405	2	0.999359	3	0.999019
DVL	DEVILS LAKE RGNL	ND	LPV	1	0.999058	1	0.999054	3	0.998859
FAR	HECTOR INTL	ND	LPV200	1	0.999145	1	0.999046	2	0.998909
GAF	HUTSON FIELD	ND	LPV	1	0.999046	1	0.999035	2	0.998836
GFK	GRAND FORKS INTL	ND	LPV	1	0.999050	1	0.999035	1	0.998871
GWR	GWINNER-ROGER MELROE FIELD	ND	LPV200	2	0.999592	2	0.999592	2	0.999004
HZE	MERCER COUNTY RGNL	ND	LPV	1	0.999233	1	0.999084	3	0.999000

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
ISN	SLOULIN FLD INTL	ND	LPV200	1	0.999119	1	0.999115	4	0.998748
JMS	JAMESTOWN RGNL	ND	LPV200	1	0.999229	1	0.999084	2	0.998920
MOT	MINOT INTL	ND	LPV	1	0.999115	1	0.999084	3	0.998859
RUG	RUGBY MUNICIPAL	ND	LP	1	0.999084	1	0.999080	3	0.998783
S25	WATFORD CITY MUNICIPAL	ND	LPV	1	0.999241	1	0.999115	4	0.998764
07K	CENTRAL CITY MUNICIPAL-LARRY REINEKE FIELD	NE	LPV	0	1	1	0.999966	1	0.999767
0B4	HARTINGTON MUNICIPAL	NE	LPV	1	0.999783	1	0.999638	2	0.999580
0C4	PENDER MUNICIPAL	NE	LPV	0	1	1	0.999756	2	0.999596
0V3	PIONEER VILLAGE FIELD	NE	LPV	0	1	0	1	0	1
12K	SUPERIOR MUNICIPAL	NE	LPV	0	1	0	1	0	1
4V9	ANTELOPE COUNTY	NE	LPV	0	1	1	0.999702	2	0.999592
6K3	CREIGHTON MUNICIPAL	NE	LPV	0	1	1	0.999641	2	0.999592
7V7	RED CLOUD MUNICIPAL	NE	LPV	0	1	0	1	0	1
8V2	STUART-ATKINSON MUNICIPAL	NE	LPV	0	1	1	0.999622	2	0.999592
93Y	DAVID CITY MUNICIPAL	NE	LPV	0	1	1	0.999931	1	0.999783
9V5	MODISETT	NE	LPV	0	1	1	0.999756	2	0.999592
AFK	NEBRASKA CITY MUNICIPAL	NE	LPV	0	1	0	1	0	1
AHQ	WAHOO MUNICIPAL	NE	LPV	0	1	1	0.999928	1	0.999779
AIA	ALLIANCE MUNICIPAL	NE	LPV200	0	1	1	0.999836	3	0.999641
ANW	AINSWORTH MUNICIPAL	NE	LPV200	0	1	1	0.999626	2	0.999592
AUH	AURORA MUNICIPALCIPAL - AL POTTER FIELD	NE	LPV	0	1	0	1	1	0.999859
BBW	BROKEN BOW MUNICIPAL	NE	LPV	0	1	1	0.999878	1	0.999737
BFF	WESTERN NEB. RGNL/WILLIAM B. HEILIG FIELD	NE	LPV	0	1	1	0.999989	3	0.999554
BIE	BEATRICE MUNICIPAL	NE	LPV200	0	1	0	1	0	1
BVN	ALBION MUNICIPAL	NE	LPV	0	1	1	0.999817	2	0.999641
CDR	CHADRON MUNICIPAL	NE	LPV200	0	1	1	0.999790	2	0.999668
CEK	CRETE MUNICIPALCIPAL	NE	LPV	0	1	0	1	0	1
CZD	COZAD MUNICIPAL	NE	LPV	0	1	0	1	1	0.999847
EAR	KEARNEY RGNL	NE	LPV200	0	1	0	1	1	0.999958
FBY	FAIRBURY MUNICIPAL	NE	LPV	0	1	0	1	0	1
FET	FREMONT MUNICIPAL	NE	LPV	0	1	1	0.999886	2	0.999737
FMZ	FAIRMONT STATE AIRFIELD	NE	LPV	0	1	0	1	0	1
FNB	BRENNER FIELD	NE	LPV	0	1	0	1	0	1
GGF	GRANT MUNICIPAL	NE	LPV	0	1	0	1	3	0.999771
GRI	CENTRAL NEBRASKA RGNL	NE	LPV	0	1	0	1	1	0.999802
GRN	GORDON MUNICIPAL	NE	LPV	0	1	1	0.999706	2	0.999592
HDE	BREWSTER FIELD	NE	LPV	0	1	0	1	0	1
HSI	HASTINGS MUNICIPAL	NE	LPV	0	1	0	1	0	1
IBM	KIMBALL MUNICIPAL/ROBERT E ARRAJ FI	NE	LPV	0	1	0	1	3	0.999683

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
IML	IMPERIAL MUNICIPAL	NE	LPV	0	1	0	1	2	0.999771
JYR	YORK MUNICIPALCIPAL	NE	LPV	0	1	0	1	1	0.999859
LBF	NORTH PLATTE RGNL AIRPORT LEE BIRD FIELD	NE	LPV	0	1	0	1	1	0.999786
LCG	WAYNE MUNICIPAL	NE	LPV	0	1	1	0.999699	2	0.999596
LNK	LINCOLN	NE	LPV	0	1	0	1	1	0.999947
LXN	JIM KELLY FIELD	NE	LPV	0	1	0	1	1	0.999882
MCK	MCCOOK RGNL	NE	LPV	0	1	0	1	2	0.999958
MLE	MILLARD	NE	LPV	0	1	1	0.999939	1	0.999863
ODX	EVELYN SHARP FIELD	NE	LPV	0	1	1	0.999832	2	0.999676
OFK	KARL STEFAN MEMORIAL	NE	LPV	0	1	1	0.999737	2	0.999592
OGA	SEARLE FIELD	NE	LPV	0	1	0	1	2	0.999748
OKS	GARDEN COUNTY	NE	LPV	0	1	1	0.999996	3	0.999676
OLU	COLUMBUS MUNICIPAL	NE	LPV	0	1	1	0.999893	2	0.999699
OMA	EPPLEY AIRFIELD	NE	LPV	0	1	1	0.999916	1	0.999840
ONL	THE O'NEILL MUNICIPAL-JOHN L BAKER FIELD	NE	LPV	0	1	1	0.999630	2	0.999592
PMV	PLATTSMOUTH MUNICIPAL	NE	LPV	0	1	0	1	1	0.999920
RBE	ROCK COUNTY	NE	LPV	0	1	1	0.999626	2	0.999592
SNY	SIDNEY MUNICIPAL/LLOYD W. CARR FIELD	NE	LPV	0	1	0	1	3	0.999641
SWT	SEWARD MUNICIPALCIPAL	NE	LPV	0	1	0	1	1	0.999943
TIF	THOMAS COUNTY	NE	LPV	0	1	1	0.999794	2	0.999607
VTN	MILLER FIELD	NE	LPV	1	0.999977	1	0.999607	2	0.999592
ASH	BOIRE FLD	NH	LPV	0	1	1	0.999863	1	0.999592
CNH	CLAREMONT MUNICIPAL	NH	LP	0	1	1	0.999866	1	0.999599
CON	CONCORD MUNICIPAL	NH	LPV	0	1	1	0.999859	1	0.999584
DAW	SKYHAVEN	NH	LPV	0	1	1	0.999851	1	0.999580
EEN	DILLANT-HOPKINS	NH	LPV	0	1	1	0.999866	1	0.999596
HIE	MOUNT WASHINGTON RGNL	NH	LPV	0	1	1	0.999836	1	0.999611
LCI	LACONIA MUNICIPAL	NH	LPV	0	1	1	0.999851	1	0.999584
LEB	LEBANON MUNICIPAL	NH	LPV	0	1	1	0.999863	1	0.999599
MHT	MANCHESTER	NH	LPV200	0	1	1	0.999859	1	0.999592
PSM	PORTSMOUTH INTL AT PEASE	NH	LPV200	0	1	1	0.999851	1	0.999584
39N	PRINCETON	NJ	LPV	0	1	1	0.999920	1	0.999664
47N	CENTRAL JERSEY RGNL	NJ	LP	0	1	1	0.999920	1	0.999660
4N1	GREENWOOD LAKE	NJ	LP	0	1	1	0.999912	1	0.999645
ACY	ATLANTIC CITY INTL	NJ	LPV200	1	0.999947	2	0.999886	2	0.999504
CDW	ESSEX COUNTY	NJ	LPV	0	1	1	0.999912	1	0.999653
EWR	NEWARK LIBERTY INTL	NJ	LPV	0	1	1	0.999912	1	0.999657
MIV	MILLVILLE MUNICIPAL	NJ	LPV200	1	0.999954	2	0.999912	2	0.999531
MMU	MORRISTOWN MUNICIPAL	NJ	LPV200	0	1	1	0.999916	1	0.999653
N14	FLYING W	NJ	LPV	0	1	1	0.999931	1	0.999679
N40	SKY MANOR	NJ	LP	0	1	1	0.999924	1	0.999660

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
TEB	TETERBORO	NJ	LPV	0	1	1	0.999912	1	0.999653
TTN	TRENTON MERCER	NJ	LPV200	0	1	1	0.999928	1	0.999668
VAY	SOUTH JERSEY RGNL	NJ	LP	0	1	1	0.999931	1	0.999676
WWD	CAPE MAY COUNTY	NJ	LPV	1	0.999889	2	0.999851	2	0.999386
CYDF	DEER LAKE	NL	LPV	1	0.999996	5	0.999424	154	0.988301
ABQ	ALBUQUERQUE INTL SUNPORT	NM	LPV	0	1	0	1	0	1
CNM	CAVERN CITY AIR TRML	NM	LP	0	1	0	1	1	0.999996
CVN	CLOVIS MUNICIPAL	NM	LPV	0	1	0	1	2	0.999981
DMN	DEMING MUNICIPAL	NM	LPV	0	1	0	1	1	0.999958
FMN	FOUR CORNERS RGNL	NM	LPV200	0	1	0	1	0	1
HOB	LEA COUNTY RGNL	NM	LPV200	0	1	0	1	0	1
LAM	LOS ALAMOS	NM	LP	0	1	0	1	0	1
ONM	SOCORRO MUNICIPAL	NM	LP	0	1	0	1	0	1
ROW	ROSWELL INTL AIR CENTER	NM	LPV	0	1	0	1	1	0.999996
SRR	SIERRA BLANCA RGNL	NM	LPV200	0	1	0	1	0	1
SVC	GRANT COUNTY	NM	LPV	0	1	0	1	0	1
CYHZ	HALIFAX / STANFIELD INTL	NS	LPV	0	1	1	0.999744	3	0.999393
CYEV	INUVIK	NT	LPV	1	0.999641	1	0.999191	15	0.997474
ELY	ELY ARPT-YELLAND FLD	NV	LPV	0	1	0	1	0	1
LAS	MC CARRAN INTL	NV	LPV	0	1	0	1	0	1
RNO	RENO/TAHOE INTL	NV	LPV	0	1	0	1	2	0.999908
RTS	RENO/STEAD	NV	LPV	0	1	0	1	2	0.999908
TPH	TONOPAH	NV	LP	0	1	0	1	0	1
WMC	WINNEMUCCA MUNICIPAL	NV	LPV	0	1	0	1	0	1
06N	RANDALL	NY	LP	0	1	1	0.999912	1	0.999641
1B1	COLUMBIA COUNTY	NY	LPV	0	1	1	0.999893	1	0.999615
44N	SKY ACRES	NY	LPV	0	1	1	0.999897	1	0.999630
4B6	TICONDEROGA MUNICIPAL	NY	LPV	0	1	1	0.999874	1	0.999626
5B2	SARATOGA COUNTY	NY	LPV	0	1	1	0.999886	1	0.999618
5G0	LE ROY	NY	LP	0	1	1	0.999924	1	0.999699
7G0	LEDGEDALE AIRPARK	NY	LPV	0	1	1	0.999924	1	0.999699
9G0	BUFFALO AIRFIELD	NY	LP	0	1	1	0.999943	1	0.999710
ALB	ALBANY INTL	NY	LPV200	0	1	1	0.999889	1	0.999618
ART	WATERTOWN INTL	NY	LPV200	0	1	1	0.999893	1	0.999664
BGM	GREATER BINGHAMTON/EDWIN A LINK FIELD	NY	LPV200	0	1	1	0.999916	1	0.999649
BUF	BUFFALO NIAGARA INTL	NY	LPV200	0	1	1	0.999939	1	0.999710
D38	CANANDAIGUA	NY	LP	0	1	1	0.999920	1	0.999687
ELM	ELMIRA/CORNING RGNL	NY	LPV200	0	1	1	0.999928	1	0.999676
ELZ	WELLSVILLE MUNICIPAL ARPT	NY	LPV	0	1	1	0.999947	1	0.999691
FOK	FRANCIS S. GABRESKI	NY	LPV200	0	1	1	0.999897	1	0.999645
FRG	REPUBLIC	NY	LPV200	0	1	1	0.999908	1	0.999653

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
FZY	OSWEGO COUNTY	NY	LPV	0	1	1	0.999908	1	0.999664
GFL	FLOYD BENNETT MEMORIAL	NY	LPV	0	1	1	0.999878	1	0.999622
GVQ	BATAVIA	NY	LPV200	0	1	1	0.999924	1	0.999702
HPN	WESTCHESTER COUNTY	NY	LPV	0	1	1	0.999905	1	0.999645
HTF	HORNELL MUNICIPAL	NY	LPV	0	1	1	0.999943	1	0.999687
HTO	EAST HAMPTON	NY	LPV	0	1	1	0.999889	1	0.999641
HWV	BROOKHAVEN	NY	LPV	0	1	1	0.999897	1	0.999645
IAG	NIAGARA FALLS INTL	NY	LPV	0	1	1	0.999939	1	0.999714
ISP	LONG ISLAND MAC ARTHUR	NY	LPV200	0	1	1	0.999901	1	0.999649
ITH	ITHACA TOMPKINS RGNL	NY	LPV	0	1	1	0.999920	1	0.999660
JFK	JOHN F KENNEDY INTL	NY	LPV	0	1	1	0.999912	1	0.999653
JHW	CHAUTAUQUA COUNTY/JAMESTOWN	NY	LPV200	0	1	1	0.999996	1	0.999710
K09	PISECO	NY	LP	0	1	1	0.999886	1	0.999638
LGA	LA GUARDIA	NY	LPV200	0	1	1	0.999912	1	0.999649
MAL	MALONE-DUFORT	NY	LPV	0	1	1	0.999859	1	0.999645
MGJ	ORANGE COUNTY	NY	LPV	0	1	1	0.999905	1	0.999634
MSS	MASSENA INTL-RICHARDS FIELD	NY	LPV	0	1	1	0.999870	1	0.999657
MSV	SULLIVAN COUNTY INTL	NY	LPV	0	1	1	0.999912	1	0.999634
N66	ONEONTA MUNICIPAL	NY	LPV	0	1	1	0.999905	1	0.999634
NY0	FULTON COUNTY	NY	LPV	0	1	1	0.999893	1	0.999630
OGS	OGDENSBURG INTL	NY	LPV	0	1	1	0.999878	1	0.999664
OLE	CATTARAUGUS COUNTY-OLEAN	NY	LPV	0	1	1	0.999950	1	0.999699
PBG	PLATTSBURGH INTL	NY	LPV	0	1	1	0.999859	1	0.999630
PEO	PENN YAN	NY	LPV	0	1	1	0.999920	1	0.999679
POU	DUTCHESS COUNTY	NY	LPV	0	1	1	0.999901	1	0.999634
RME	GRIFFISS INTL	NY	LPV200	0	1	1	0.999893	1	0.999649
ROC	GREATER ROCHESTER INTL	NY	LPV200	0	1	1	0.999920	1	0.999691
SCH	SCHENECTADY COUNTY	NY	LPV200	0	1	1	0.999889	1	0.999622
SDC	WILLIAMSON-SODUS	NY	LPV	0	1	1	0.999916	1	0.999679
SLK	ADIRONDACK RGNL	NY	LPV200	0	1	1	0.999874	1	0.999638
SWF	STEWART INTL	NY	LPV200	0	1	1	0.999905	1	0.999634
SYR	SYRACUSE HANCOCK INTL	NY	LPV200	0	1	1	0.999908	1	0.999660
VGC	HAMILTON MUNICIPAL	NY	LPV	0	1	1	0.999905	1	0.999649
0G6	WILLIAMS COUNTY	OH	LPV	0	1	0	1	1	0.999813
16G	SENECA COUNTY	OH	LPV	0	1	0	1	1	0.999786
1G0	WOOD COUNTY	OH	LPV	0	1	0	1	1	0.999798
1G3	KENT STATE UNIV	OH	LPV	0	1	0	1	1	0.999748
4I3	KNOX COUNTY	OH	LPV200	0	1	0	1	1	0.999767
6G5	BARNESVILLE-BRADFIELD	OH	LP	0	1	0	1	1	0.999737
AOH	LIMA ALLEN COUNTY	OH	LPV200	0	1	0	1	1	0.999798
AXV	NEIL ARMSTRONG	OH	LPV	0	1	0	1	1	0.999802

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
BJJ	WAYNE COUNTY	OH	LPV	0	1	0	1	1	0.999756
BKL	BROOKHAVEN	OH	LPV	0	1	0	1	1	0.999756
CAK	AKRON-CANTON RGNL	OH	LPV200	0	1	0	1	1	0.999748
CGF	CUYAHOGA COUNTY	OH	LPV	0	1	0	1	1	0.999756
CLE	CLEVELAND-HOPKINS INTL	OH	LPV200	0	1	0	1	1	0.999756
CMH	PORT COLUMBUS INTL	OH	LPV200	0	1	0	1	1	0.999771
CQA	LAKEFIELD	OH	LPV	0	1	0	1	1	0.999809
CXY	CAPITAL CITY	OH	LPV	0	1	1	0.999996	1	0.999683
DAY	JAMES M COX DAYTON INTL	OH	LPV200	0	1	0	1	1	0.999802
DLZ	DELAWARE MUNICIPAL	OH	LPV	0	1	0	1	1	0.999779
EDJ	BELLEFONTAINE RGNL	OH	LPV	0	1	0	1	1	0.999794
FDY	FINDLAY	OH	LPV	0	1	0	1	1	0.999790
FZI	FOSTORIA METROPOLITAN	OH	LPV	0	1	0	1	1	0.999790
GQQ	GALION MUNICIPAL	OH	LP	0	1	0	1	1	0.999775
HAO	BUTLER CO RGNL	OH	LPV	0	1	0	1	1	0.999802
HZY	ASHTABULA COUNTY	OH	LPV	0	1	0	1	1	0.999741
I19	GREENE COUNTY-LEWIS A JACKSON RGNL	OH	LPV	0	1	0	1	1	0.999794
I66	CLINTON FIELD	OH	LPV	0	1	0	1	1	0.999790
I68	LEBANON-WARREN COUNTY	OH	LPV	0	1	0	1	1	0.999798
I69	CLERMONT COUNTY	OH	LP	0	1	0	1	1	0.999794
I74	GRIMES FIELD	OH	LPV	0	1	0	1	1	0.999790
ILN	AIRBORNE AIRPARK	OH	LPV200	0	1	0	1	1	0.999786
LCK	RICKENBACKER INTL	OH	LPV200	0	1	0	1	1	0.999771
LHQ	FAIRFIELD COUNTY	OH	LPV200	0	1	0	1	1	0.999763
LNN	WILLOUGHBY	OH	LPV	0	1	0	1	1	0.999756
LPR	LORAIN COUNTY RGNL	OH	LPV200	0	1	0	1	1	0.999763
LUK	CINCINNATI MUNICIPAL AIRPORT-LUNKEN FIELD	OH	LPV	0	1	0	1	1	0.999802
MFD	MANSFIELD LAHM RGNL	OH	LPV200	0	1	0	1	1	0.999771
MGY	DAYTON-WRIGHT BROTHERS	OH	LPV	0	1	0	1	1	0.999802
MNN	MARION MUNICIPAL	OH	LPV	0	1	0	1	1	0.999779
MRT	UNION COUNTY	OH	LP	0	1	0	1	1	0.999783
MWO	MIDDLETOWN REGIONAL/HOOK FIELD	OH	LPV	0	1	0	1	1	0.999802
OSU	OHIO STATE UNIVERSITY	OH	LPV200	0	1	0	1	1	0.999775
OWX	PUTNAM COUNTY	OH	LPV	0	1	0	1	1	0.999802
OXD	MIAMI UNIVERSITY	OH	LPV	0	1	0	1	1	0.999809
PCW	CARL R KELLER FIELD	OH	LPV	0	1	0	1	1	0.999783
PHD	HARRY CLEVER FIELD	OH	LP	0	1	0	1	1	0.999744
PMH	GREATER PORTSMOUTH RGNL	OH	LPV	0	1	0	1	1	0.999767
RZT	ROSS COUNTY	OH	LPV	0	1	0	1	1	0.999771
S24	SANDUSKY COUNTY RGNL	OH	LPV	0	1	0	1	1	0.999786
SGH	SPRINGFIELD-BECKLEY	OH	LPV200	0	1	0	1	1	0.999790

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
	MUNICIPAL								
TDZ	TOLEDO EXECUTIVE	OH	LP	0	1	0	1	1	0.999798
TOL	TOLEDO EXPRESS	OH	LPV200	0	1	0	1	1	0.999802
TSO	CARROLL COUNTY-TOLSON	OH	LP	0	1	0	1	1	0.999741
TZR	BOLTON FIELD	OH	LPV200	0	1	0	1	1	0.999775
UNI	OHIO UNIVERSITY SNYDER FIELD	OH	LPV200	0	1	0	1	1	0.999752
USE	FULTON COUNTY	OH	LPV	0	1	0	1	1	0.999805
UYF	MADISON COUNTY	OH	LPV	0	1	0	1	1	0.999783
YNG	YOUNGSTOWN/WARREN RGNL	OH	LPV	0	1	0	1	1	0.999737
1F0	ARDMORE DOWNTOWN EXECUTIVE	OK	LP	0	1	0	1	10	0.999725
80F	ANTLERS MUNICIPAL	OK	LPV	0	1	0	1	10	0.999775
ADH	ADA MUNICIPAL	OK	LPV	0	1	0	1	9	0.999573
ADM	ARDMORE MUNICIPAL	OK	LPV200	0	1	0	1	10	0.999687
AXS	ALTUS/QUARTZ MOUNTAIN RGNL	OK	LPV	0	1	0	1	7	0.999870
BKN	BLACKWELL-TONKAWA MUNICIPAL	OK	LPV	0	1	0	1	5	0.999771
BVO	BARTLESVILLE MUNICIPAL	OK	LPV	0	1	0	1	0	1
CHK	CHICKASHA MUNICIPAL	OK	LPV200	0	1	0	1	7	0.999756
CLK	CLINTON RGNL	OK	LPV200	0	1	0	1	5	0.999817
CSM	CLINTON-SHERMAN	OK	LPV200	0	1	0	1	5	0.999840
DUA	EAKER FIELD	OK	LPV	0	1	0	1	10	0.999744
DUC	HALLIBURTON FIELD	OK	LPV	0	1	0	1	10	0.999767
ELK	ELK CITY RGNL BUSINESS	OK	LPV	0	1	0	1	5	0.999855
F22	PERRY MUNICIPAL	OK	LPV	0	1	0	1	6	0.999569
FDR	FREDERICK RGNL	OK	LPV200	0	1	0	1	8	0.999889
GCM	CLAREMORE RGNL	OK	LPV	0	1	0	1	0	1
GMJ	GROVE MUNICIPAL	OK	LPV	0	1	0	1	0	1
GOK	GUTHRIE-EDMOND RGNL	OK	LPV	0	1	0	1	6	0.999615
GUY	GUYMON MUNICIPAL	OK	LPV	0	1	0	1	2	0.999878
GZL	STIGLER RGNL	OK	LPV	0	1	0	1	0	1
HBR	HOBART MUNICIPAL	OK	LPV	0	1	0	1	6	0.999859
HSD	SUNDANCE AIRPARK	OK	LPV	0	1	0	1	6	0.999687
MKO	DAVIS FIELD	OK	LPV	0	1	0	1	0	1
MLC	MC ALESTER RGNL	OK	LPV	0	1	0	1	9	0.999596
OKC	WILL ROGERS WORLD	OK	LPV200	0	1	0	1	6	0.999687
OKM	OKMULGEE RGNL	OK	LPV	0	1	0	1	5	0.999832
OUN	UNIVERSITY OF OKLAHOMA WESTHEIMER	OK	LPV200	0	1	0	1	6	0.999683
OWP	WILLIAM R. POGUE MUNICIPAL	OK	LPV	0	1	0	1	2	0.999992
PNC	PONCA CITY RGNL	OK	LPV	0	1	0	1	2	0.999866
PVJ	PAULS VALLEY MUNICIPAL	OK	LPV200	0	1	0	1	8	0.999657

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
PWA	WILEY POST	OK	LPV200	0	1	0	1	6	0.999679
RCE	CLARENCE E. PAGE MUNICIPAL	OK	LPV	0	1	0	1	6	0.999710
RVS	RICHARD LLOYD JONES JR	OK	LPV	0	1	0	1	1	0.999996
SNL	SHAWNEE RGNL	OK	LPV200	0	1	0	1	7	0.999603
SWO	STILLWATER RGNL	OK	LPV	0	1	0	1	7	0.999561
TQH	TAHLEQUAH MUNICIPAL	OK	LPV	0	1	0	1	0	1
TUL	TULSA INTL	OK	LPV200	0	1	0	1	0	1
WDG	ENID WOODRING RGNL	OK	LPV200	0	1	0	1	5	0.999649
WWR	WEST WOODWARD	OK	LPV	0	1	0	1	5	0.999798
CNS7	KINCARDINE	ON	LPV	0	1	1	0.999943	1	0.999767
CYHD	DRYDEN REGIONAL	ON	LPV	1	0.999084	1	0.998989	1	0.998794
CYKF	KITCHENER / WATERLOO	ON	LPV	0	1	1	0.999947	1	0.999741
CYOW	OTTAWA / MACDONALDCARTIER INTL	ON	LPV	0	1	1	0.999870	1	0.999672
CYQT	THUNDER BAY	ON	LPV	1	0.999638	1	0.999496	4	0.998653
CYTS	TIMMINS / VICTOR M POWER	ON	LPV	0	1	1	0.999897	3	0.999409
CYXL	SIOUX LOOKOUT	ON	LPV	1	0.999084	1	0.999004	2	0.998737
AST	ASTORIA RGNL	OR	LPV	0	1	0	1	4	0.999794
BDN	BEND MUNICIPAL	OR	LPV	0	1	0	1	1	0.999962
CVO	CORVALLIS MUNICIPAL	OR	LPV200	0	1	0	1	7	0.999805
EUG	MAHLON SWEET FIELD	OR	LPV200	0	1	0	1	7	0.999824
GCD	GRANT CO RGNL/OGILVIE FIELD	OR	LPV	0	1	0	1	0	1
HIO	PORTLAND-HILLSBORO	OR	LPV200	0	1	0	1	4	0.999916
LGD	LA GRANDE/UNION COUNTY	OR	LPV	0	1	0	1	0	1
LMT	KLAMATH FALLS	OR	LPV	0	1	0	1	3	0.999912
MMV	MCMINNVILLE MUNICIPAL	OR	LPV	0	1	0	1	5	0.999916
ONO	ONTARIO MUNICIPAL	OR	LPV	0	1	0	1	0	1
PDT	EASTERN OREGON RGNL AT PENDLETON	OR	LPV200	0	1	0	1	0	1
PDX	PORTLAND INTL	OR	LPV200	0	1	0	1	3	0.999893
RDM	ROBERTS FIELD	OR	LPV200	0	1	0	1	1	0.999962
S33	MADRAS MUNICIPALCIPAL	OR	LPV	0	1	0	1	1	0.999962
SLE	MCNARY FLD	OR	LPV200	0	1	0	1	6	0.999893
SPB	SCAPPOOSE INDUSTRIAL AIRPARK	OR	LPV	0	1	0	1	4	0.999897
UAO	AURORA STATE	OR	LPV	0	1	0	1	4	0.999928
22N	JAKE ARNER MEMORIAL	PA	LP	0	1	1	0.999939	1	0.999664
2G9	SOMERSET COUNTY	PA	LPV	0	1	0	1	1	0.999702
8G2	CORRY-LAWRENCE	PA	LPV	0	1	0	1	1	0.999718
8N8	DANVILLE	PA	LP	0	1	1	0.999954	1	0.999668
9D4	DECK	PA	LPV	0	1	1	0.999969	1	0.999679
ABE	LEHIGH VALLEY INTL	PA	LPV	0	1	1	0.999931	1	0.999660

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
AFJ	WASHINGTON COUNTY	PA	LPV200	0	1	0	1	1	0.999721
AGC	ALLEGHENY COUNTY	PA	LPV200	0	1	0	1	1	0.999718
AOO	ALTOONA-BLAIR COUNTY	PA	LPV	0	1	0	1	1	0.999687
AVP	WILKES-BARRE/SCRANTON INTL	PA	LPV	0	1	1	0.999920	1	0.999645
AXQ	CLARION COUNTY	PA	LPV	0	1	0	1	1	0.999710
BFD	BRADFORD RGNL	PA	LPV200	0	1	1	0.999992	1	0.999699
BTP	BUTLER COUNTY/K W SCHOLTER FLD	PA	LPV	0	1	0	1	1	0.999721
BVI	BEAVER FALLS MUNICIPAL	PA	LPV	0	1	0	1	1	0.999729
DUJ	DUBOIS RGNL	PA	LPV200	0	1	0	1	1	0.999699
ERI	ERIE INTL/TOM RIDGE FIELD	PA	LPV	0	1	0	1	1	0.999729
FIG	CLEARFIELD-LAWRENCE	PA	LPV	0	1	0	1	1	0.999691
FKL	VENANGO RGNL	PA	LPV	0	1	0	1	1	0.999721
FWQ	ROSTRAVER	PA	LPV	0	1	0	1	1	0.999714
GKJ	PORT MEADVILLE	PA	LP	0	1	0	1	1	0.999733
HMZ	BEDFORD COUNTY	PA	LPV	0	1	0	1	1	0.999695
HZL	HAZLETON MUNICIPAL	PA	LPV	0	1	1	0.999939	1	0.999664
IPT	WILLIAMSPORT RGNL	PA	LPV	0	1	1	0.999954	1	0.999664
JST	JOHN MURTHA JOHNSTOWN-CAMBRIA COUNTY	PA	LPV200	0	1	0	1	1	0.999687
LBE	ARNOLD PALMER RGNL	PA	LPV	0	1	0	1	1	0.999706
LNS	LANCASTER	PA	LPV	0	1	1	0.999981	1	0.999687
LOM	WINGS FIELD	PA	LPV	0	1	1	0.999943	1	0.999672
MDT	HARRISBURG INTL	PA	LPV	0	1	1	0.999996	1	0.999683
MPO	POCONO MOUNTAINS MUNICIPAL	PA	LPV	0	1	1	0.999920	1	0.999653
MQS	CHESTER COUNTY G O CARLSON	PA	LPV	0	1	1	0.999966	1	0.999687
N38	WELLSBORO JOHNSTON	PA	LP	0	1	1	0.999950	1	0.999679
N79	NORTHUMBERLAND COUNTY	PA	LPV	0	1	1	0.999954	1	0.999672
OYM	ST MARYS MUNICIPAL	PA	LPV	0	1	0	1	1	0.999691
PHL	PHILADELPHIA INTL	PA	LPV	0	1	1	0.999947	1	0.999687
PIT	PITTSBURGH INTL	PA	LPV200	0	1	0	1	1	0.999725
PNE	NORTHEAST PHILADELPHIA	PA	LPV	0	1	1	0.999939	1	0.999676
PSB	MID STATE	PA	LPV	0	1	0	1	1	0.999679
RDG	READING RGNL/CARL A SPAATZ FLD	PA	LPV	0	1	1	0.999954	1	0.999676
RVL	MIFFLIN COUNTY	PA	LPV	0	1	0	1	1	0.999676
THV	YORK	PA	LP	0	1	0	1	1	0.999691
UCP	NEW CASTLE MUNICIPAL	PA	LPV	0	1	0	1	1	0.999729
UKT	QUAKERTOWN	PA	LP	0	1	1	0.999939	1	0.999664
UNV	UNIVERSITY PARK	PA	LPV200	0	1	0	1	1	0.999676
VVS	JOSEPH A. HARDY	PA	LPV200	0	1	0	1	1	0.999714

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
	CONNELLSVILLE								
WAY	GREENE COUNTY	PA	LPV	0	1	0	1	1	0.999714
WBW	WILKES-BARRE WYOMING VALLEY	PA	LPV	0	1	1	0.999928	1	0.999645
XLL	ALLENTOWN-QUEEN CITY MUNICIPAL	PA	LP	0	1	1	0.999939	1	0.999672
ZER	SCHUYLKILL COUNTY/JOE ZERBEY	PA	LPV200	0	1	1	0.999954	1	0.999672
CPN8	OPINACA	QC	LPV	1	0.999878	2	0.999638	6	0.998707
CSR3	VICTORIAVILLE	QC	LPV	0	1	1	0.999821	1	0.999618
CTP9	KATTINIQ / DONALDSON	QC	LPV	5	0.999389	10	0.998176	92	0.987714
CYFY	AMOS	QC	LPV	0	1	1	0.999847	2	0.999668
CYHU	MONTREAL / STHUBERT	QC	LPV	0	1	1	0.999840	1	0.999638
CYIF	STAUGUSTIN	QC	LPV	2	0.999992	5	0.999195	24	0.997073
CYMX	MONTREAL (MIRABEL INTL)	QC	LPV	0	1	1	0.999840	1	0.999649
CYQB	QUEBEC / JEAN LESAGE INTL	QC	LPV	0	1	1	0.999813	1	0.999615
CYRI	RIVIEREDULOUP	QC	LPV	0	1	1	0.999794	2	0.999550
CYRQ	TROISRIVIERES	QC	LPV	0	1	1	0.999824	1	0.999630
CYVB	BONAVENTURE	QC	LPV	0	1	1	0.999756	3	0.999409
CYVP	KUUJUAQ	QC	LPV	6	0.999245	12	0.998367	43	0.993452
CYYY	MONTJOLI	QC	LPV	0	1	1	0.999771	3	0.999466
BID	BLOCK ISLAND STATE	RI	LPV	0	1	1	0.999882	1	0.999634
OQU	QUONSET STATE	RI	LPV	0	1	1	0.999874	1	0.999622
PVD	THEODORE FRANCIS GREEN STATE	RI	LPV200	0	1	1	0.999874	1	0.999618
6J0	LEXINGTON COUNTY AT PELION	SC	LPV	0	1	0	1	1	0.999870
AIK	AIKEN MUNICIPAL	SC	LPV200	0	1	0	1	1	0.999874
AND	ANDERSON RGNL	SC	LPV200	0	1	0	1	1	0.999855
ARW	BEAUFORT COUNTY	SC	LPV200	0	1	0	1	1	0.999855
BBP	MARLBORO COUNTY JETPORT-HEAVENT FIELD	SC	LPV	0	1	0	1	1	0.999836
BNL	BARNWELL RGNL	SC	LPV	0	1	0	1	1	0.999882
CAE	COLUMBIA METROPOLITAN	SC	LPV200	0	1	0	1	1	0.999866
CDN	WOODWARD FIELD	SC	LPV	0	1	0	1	1	0.999847
CEU	OCONEE COUNTY RGNL	SC	LPV200	0	1	0	1	1	0.999855
CHS	CHARLESTON AFB/INTL	SC	LPV200	0	1	0	1	1	0.999851
CRE	GRAND STRAND	SC	LPV200	0	1	0	1	2	0.999710
DCM	CHESTER CATAWBA RGNL	SC	LPV	0	1	0	1	1	0.999847
DYB	SUMMERVILLE	SC	LPV200	0	1	0	1	1	0.999859
FDW	FAIRFIELD COUNTY	SC	LPV	0	1	0	1	1	0.999859
FLO	FLORENCE RGNL	SC	LPV	0	1	0	1	1	0.999847
GGE	GEORGETOWN COUNTY	SC	LPV200	0	1	0	1	2	0.999767
GMU	GREENVILLE DOWNTOWN	SC	LPV200	0	1	0	1	1	0.999847

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
GSP	GREENVILLE-SPARTANBURG INTL - ROGER MILLIKEN	SC	LPV200	0	1	0	1	1	0.999847
GYH	DONALDSON CENTER	SC	LPV	0	1	0	1	1	0.999851
HYW	CONWAY-HORRY COUNTY	SC	LPV	0	1	0	1	2	0.999733
JZI	CHARLESTON EXECUTIVE	SC	LPV200	0	1	0	1	1	0.999851
LKR	LANCASTER COUNTY-MC WHIRTER FIELD	SC	LPV200	0	1	0	1	1	0.999840
LQK	PICKENS COUNTY	SC	LPV	0	1	0	1	1	0.999847
LRO	MT PLEASANT RGNL-FAISON FIELD	SC	LPV	0	1	0	1	1	0.999851
MKS	BERKELEY COUNTY	SC	LPV	0	1	0	1	1	0.999855
MYR	MYRTLE BEACH INTL	SC	LPV200	0	1	0	1	2	0.999718
OGB	ORANGEBURG MUNICIPAL	SC	LPV200	0	1	0	1	1	0.999870
RBW	LOWCOUNTRY RGNL	SC	LPV200	0	1	0	1	1	0.999863
SMS	SUMTER	SC	LPV200	0	1	0	1	1	0.999855
SPA	SPARTANBURG DOWNTOWN MEMORIAL	SC	LPV200	0	1	0	1	1	0.999847
UDG	DARLINGTON COUNTY JETPORT	SC	LPV	0	1	0	1	1	0.999844
UZA	ROCK HILL/YORK CO/BRYANT FIELD	SC	LPV200	0	1	0	1	1	0.999840
0D8	GETTYSBURG MUNICIPAL	SD	LPV200	1	0.999603	1	0.999599	3	0.999565
49B	STURGIS MUNICIPAL	SD	LPV	1	0.999958	1	0.999607	3	0.999580
9D1	GREGORY MUNICIPAL - FLYNN FIELD	SD	LPV	1	0.999920	1	0.999599	2	0.999584
ABR	ABERDEEN RGNL	SD	LPV200	1	0.999596	1	0.999596	3	0.999527
ATY	WATERTOWN RGNL	SD	LPV200	1	0.999706	1	0.999596	2	0.999565
BKX	BROOKINGS RGNL	SD	LPV	1	0.999706	1	0.999599	2	0.999573
EFC	BELLE FOURCHE MUNICIPAL	SD	LPV	2	0.999958	1	0.999607	3	0.999573
FSD	JOE FOSS FIELD	SD	LPV200	1	0.999710	1	0.999630	2	0.999576
HON	HURON RGNL	SD	LPV200	1	0.999706	1	0.999596	2	0.999573
HSR	HOT SPRINGS MUNICIPAL	SD	LP	0	1	1	0.999775	3	0.999645
ICR	WINNER RGNL	SD	LPV	1	0.999916	1	0.999599	2	0.999584
MBG	MOBRIDGE MUNICIPAL	SD	LPV	1	0.999599	1	0.999599	3	0.999374
MDS	MADISON MUNICIPAL	SD	LPV	1	0.999706	1	0.999599	2	0.999573
MHE	MITCHELL MUNICIPAL	SD	LPV	1	0.999710	1	0.999599	2	0.999576
MKA	MILLER MUNICIPAL	SD	LPV200	1	0.999710	1	0.999599	2	0.999573
PIR	PIERRE RGNL	SD	LPV	1	0.999710	1	0.999599	3	0.999573
RAP	RAPID CITY RGNL	SD	LPV200	1	0.999966	1	0.999607	3	0.999584
SPF	BLACK HILLS-CLYDE ICE FIELD	SD	LPV	1	0.999985	1	0.999607	3	0.999576
VMR	HAROLD DAVIDSON FIELD	SD	LPV	1	0.999767	1	0.999638	2	0.999584
YKN	CHAN GURNEY MUNICIPAL	SD	LPV200	1	0.999721	1	0.999630	2	0.999580
CKQ8	MCARTHUR RIVER	SK	LPV	1	0.998684	1	0.998500	9	0.997680

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
CYKJ	KEY LAKE	SK	LPV	1	0.998687	1	0.998558	7	0.997817
0A3	SMITHVILLE MUNICIPAL	TN	LP	0	1	0	1	1	0.999832
0M3	JOHN A BAKER	TN	LP	0	1	0	1	1	0.999859
0M4	BENTON COUNTY	TN	LPV	0	1	0	1	1	0.999859
0M5	HUMPHREYS COUNTY	TN	LP	0	1	0	1	1	0.999855
1A3	MARTIN CAMPBELL FIELD	TN	LP	0	1	0	1	1	0.999855
1M5	PORTLAND MUNICIPAL	TN	LPV	0	1	0	1	1	0.999836
2A0	MARK ANTON	TN	LPV	0	1	0	1	1	0.999847
2M8	CHARLES W. BAKER	TN	LPV	0	1	0	1	1	0.999893
3M7	LAFAYETTE MUNICIPAL	TN	LPV	0	1	0	1	1	0.999832
BGF	WINCHESTER MUNICIPAL	TN	LPV	0	1	0	1	1	0.999851
BNA	NASHVILLE INTL	TN	LPV200	0	1	0	1	1	0.999836
CHA	LOVELL FIELD	TN	LPV200	0	1	0	1	1	0.999855
CKV	OUTLAW FIELD	TN	LPV	0	1	0	1	1	0.999847
CSV	CROSSVILLE MEMORIAL-WHITSON FIELD	TN	LPV200	0	1	0	1	1	0.999836
DKX	KNOXVILLE DOWNTOWN ISLAND	TN	LPV	0	1	0	1	1	0.999824
DYR	DYERSBURG RGNL	TN	LPV	0	1	0	1	1	0.999886
FYE	FAYETTE CO	TN	LPV	0	1	0	1	1	0.999886
FYM	FAYETTEVILLE MUNICIPAL	TN	LPV	0	1	0	1	1	0.999855
GKT	GATLINBURG-PIGEON FORGE	TN	LPV	0	1	0	1	1	0.999828
GZS	ABERNATHY FIELD	TN	LPV	0	1	0	1	1	0.999855
HZD	CARROLL COUNTY	TN	LPV	0	1	0	1	1	0.999863
JWN	JOHN C. TUNE	TN	LPV	0	1	0	1	1	0.999840
LUG	ELLINGTON	TN	LPV	0	1	0	1	1	0.999847
M01	GENERAL DEWITT SPAIN	TN	LPV	0	1	0	1	1	0.999897
M33	SUMNER COUNTY RGNL	TN	LP	0	1	0	1	1	0.999836
M54	LEBANON MUNICIPAL	TN	LPV	0	1	0	1	1	0.999836
M91	SPRINGFIELD ROBERTSON COUNTY	TN	LPV	0	1	0	1	1	0.999840
MBT	MURFREESBORO MUNICIPAL	TN	LPV	0	1	0	1	1	0.999836
MEM	MEMPHIS INTL	TN	LPV200	0	1	0	1	1	0.999897
MKL	MC KELLAR-SIPES RGNL	TN	LPV200	0	1	0	1	1	0.999878
MMI	MCMINN COUNTY	TN	LPV	0	1	0	1	1	0.999844
MOR	MOORE-MURRELL	TN	LPV	0	1	0	1	1	0.999817
MQY	SMYRNA	TN	LPV	0	1	0	1	1	0.999836
MRC	MAURY COUNTY	TN	LPV	0	1	0	1	1	0.999851
NQA	MILLINGTON RGNL JETPORT	TN	LPV	0	1	0	1	1	0.999893
PHT	HENRY COUNTY	TN	LPV200	0	1	0	1	1	0.999866
PVE	BEECH RIVER RGNL	TN	LPV	0	1	0	1	1	0.999863
RKW	ROCKWOOD MUNICIPAL	TN	LPV	0	1	0	1	1	0.999832
SNH	SAVANNAH-HARDIN COUNTY	TN	LPV	0	1	0	1	1	0.999866
SRB	UPPER CUMBERLAND RGNL	TN	LPV200	0	1	0	1	1	0.999832

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
SYI	BOMAR FIELD-SHELBYVILLE MUNICIPAL	TN	LPV	0	1	0	1	1	0.999840
SZY	ROBERT SIBLEY	TN	LPV	0	1	0	1	1	0.999874
THA	TULLAHOMA RGNL/WM NORTHERN FLD	TN	LPV	0	1	0	1	1	0.999844
TRI	TRI-CITIES RGNL TN/VA	TN	LPV200	0	1	0	1	1	0.999809
TYS	MCGHEE-TYSON	TN	LPV	0	1	0	1	1	0.999832
UCY	EVERETT-STEWART RGNL	TN	LPV200	0	1	0	1	1	0.999878
11R	BRENHAM MUNICIPAL	TX	LPV	0	1	0	1	1	0.999966
2F5	LAMESA MUNICIPAL	TX	LP	0	1	0	1	1	0.999996
2R9	KARNES COUNTY	TX	LP	0	1	0	1	1	0.999973
3T5	FAYETTE RGNL AIR CENTER	TX	LPV	0	1	0	1	1	0.999973
45R	HAWTHORNE FIELD	TX	LP	0	1	0	1	1	0.999931
50R	LOCKHART MUNICIPAL	TX	LPV	0	1	0	1	1	0.999958
5C1	BOERNE STAGE FIELD	TX	LP	0	1	0	1	1	0.999992
5T9	MAVERICK COUNTY MEMORIAL INTL	TX	LPV	0	1	0	1	1	0.999985
6R3	CLEVELAND MUNICIPAL	TX	LPV	0	1	0	1	1	0.999943
77F	WINTERS MUNICIPAL	TX	LP	0	1	0	1	1	0.999943
8F3	CROSBYTON MUNICIPALCIPAL	TX	LP	0	1	0	1	0	1
ABI	ABILENE RGNL	TX	LPV200	0	1	0	1	1	0.999947
ACT	WACO RGNL	TX	LPV200	0	1	0	1	0	1
ADS	ADDISON	TX	LPV	0	1	0	1	0	1
AFW	FORT WORTH ALLIANCE	TX	LPV200	0	1	0	1	1	0.999996
ALI	ALICE INTL	TX	LPV	0	1	0	1	1	0.999962
AMA	RICK HUSBAND AMARILLO INTL	TX	LPV200	0	1	0	1	2	0.999924
ARM	WHARTON RGNL	TX	LPV	0	1	0	1	1	0.999947
ASL	HARRISON COUNTY	TX	LPV	0	1	0	1	1	0.999985
AUS	AUSTIN-BERGSTROM INTL	TX	LPV200	0	1	0	1	1	0.999947
AXH	HOUSTON-SOUTHWEST	TX	LPV	0	1	0	1	1	0.999935
BAZ	NEW BRAUNFELS MUNICIPAL	TX	LPV	0	1	0	1	1	0.999958
BBD	CURTIS FIELD	TX	LPV	0	1	0	1	1	0.999966
BKD	STEPHENS COUNTY	TX	LP	0	1	0	1	1	0.999962
BPG	BIG SPRING MC MAHON-WRINKLE	TX	LPV	0	1	0	1	1	0.999958
BPT	SOUTHEAST TEXAS RGNL	TX	LPV200	0	1	0	1	1	0.999931
BRO	BROWNSVILLE/SOUTH PADRE ISLAND INTL	TX	LP	0	1	1	0.999996	1	0.999889
BWD	BROWNWOOD RGNL	TX	LPV	0	1	0	1	1	0.999966
BYY	BAY CITY MUNICIPAL	TX	LPV	0	1	0	1	1	0.999935
CFD	COULTER FIELD	TX	LPV	0	1	0	1	1	0.999973
CLL	EASTERWOOD FIELD	TX	LPV200	0	1	0	1	1	0.999973
CNW	TSTC WACO	TX	LPV200	0	1	0	1	1	0.999996

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
COM	COLEMAN MUNICIPAL	TX	LPV	0	1	0	1	1	0.999954
CRP	CORPUS CHRISTI INTL	TX	LPV200	0	1	0	1	1	0.999950
CXO	LONE STAR EXECUTIVE	TX	LPV200	0	1	0	1	1	0.999950
DAL	DALLAS LOVE FIELD	TX	LPV200	0	1	0	1	0	1
DFW	DALLAS-FT WORTH INTL	TX	LPV200	0	1	0	1	1	0.999996
DKR	HOUSTON COUNTY	TX	LP	0	1	0	1	1	0.999962
DRT	DEL RIO INTL	TX	LPV	0	1	0	1	1	0.999969
DTO	DENTON MUNICIPAL	TX	LPV	0	1	0	1	1	0.999996
DUX	MOORE COUNTY	TX	LPV200	0	1	0	1	3	0.999912
DWH	DAVID WAYNE HOOKS MEMORIAL	TX	LPV	0	1	0	1	1	0.999947
E01	ROY HURD MEMORIAL	TX	LP	0	1	0	1	1	0.999958
E11	ANDREWS COUNTY	TX	LPV	0	1	0	1	1	0.999985
E19	GRUVER MUNICIPAL	TX	LP	0	1	0	1	2	0.999905
E30	BRUCE FIELD	TX	LPV	0	1	0	1	1	0.999943
E38	ALPINE-CASPARIS MUNICIPALCIPAL	TX	LP	0	1	0	1	1	0.999901
EBG	EDINBURG INTL	TX	LPV	0	1	0	1	1	0.999908
EDC	AUSTIN EXECUTIVE	TX	LPV200	0	1	0	1	1	0.999943
EFD	ELLINGTON FIELD	TX	LPV200	0	1	0	1	1	0.999928
ELA	EAGLE LAKE	TX	LP	0	1	0	1	1	0.999958
ELP	EL PASO INTL	TX	LP	0	1	0	1	1	0.999931
ERV	KERRVILLE MUNICIPAL/LOUIS SCHREINER FLD	TX	LPV	0	1	0	1	1	0.999981
ETN	EASTLAND MUNICIPAL	TX	LP	0	1	0	1	1	0.999966
F00	JONES FIELD	TX	LPV	0	1	0	1	13	0.999844
F05	WILBARGER COUNTY	TX	LPV	0	1	0	1	8	0.999920
FST	FT. STOCKTON-PECOS COUNTY	TX	LPV	0	1	0	1	1	0.999931
FTW	FORT WORTH MEACHAM INTL	TX	LPV200	0	1	0	1	1	0.999996
FWS	FORT WORTH SPINKS	TX	LPV200	0	1	0	1	1	0.999996
GDJ	GRANBURY RGNL	TX	LPV	0	1	0	1	1	0.999989
GGG	EAST TEXAS RGNL	TX	LPV	0	1	0	1	1	0.999981
GKY	ARLINGTON MUNICIPAL	TX	LPV200	0	1	0	1	1	0.999996
GLE	GAINESVILLE MUNICIPAL	TX	LPV	0	1	0	1	10	0.999943
GLS	SCHOLES INTL AT GALVESTON	TX	LPV200	0	1	0	1	1	0.999928
GNC	GAINES COUNTY	TX	LPV	0	1	0	1	0	1
GRK	ROBERT GRAY AAF	TX	LPV200	0	1	0	1	0	1
GVT	MAJORS	TX	LPV	0	1	0	1	0	1
GYI	NORTH TEXAS RGNL/PERRIN FIELD	TX	LPV200	0	1	0	1	11	0.999859
HBV	JIM HOGG COUNTY	TX	LPV	0	1	0	1	1	0.999954
HDO	HONDO MUNICIPAL	TX	LPV	0	1	0	1	1	0.999985
HOU	WILLIAM P HOBBY	TX	LPV200	0	1	0	1	1	0.999931
HQZ	MESQUITE METRO	TX	LPV	0	1	0	1	0	1

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
HRL	VALLEY INTL	TX	LPV200	0	1	0	1	1	0.999893
HRX	HEREFORD MUNICIPAL	TX	LPV200	0	1	0	1	2	0.999947
IAH	GEORGE BUSH INTERCONTINENTAL/HOUSTON	TX	LPV200	0	1	0	1	1	0.999943
IKG	KLEBERG COUNTY	TX	LPV	0	1	0	1	1	0.999950
INJ	HILLSBORO MUNICIPAL	TX	LPV	0	1	0	1	0	1
IWS	WEST HOUSTON	TX	LP	0	1	0	1	1	0.999947
JAS	JASPER COUNTY-BELL FIELD	TX	LPV	0	1	0	1	1	0.999931
JSO	CHEROKEE COUNTY	TX	LPV200	0	1	0	1	1	0.999969
JWY	MID-WAY RGNL	TX	LPV200	0	1	0	1	0	1
LBB	LUBBOCK PRESTON SMITH INTL	TX	LPV200	0	1	0	1	0	1
LBX	BRAZORIA COUNTY	TX	LPV	0	1	0	1	1	0.999928
LFK	ANGELINA COUNTY	TX	LPV	0	1	0	1	1	0.999947
LHB	HEARNE MUNICIPAL	TX	LPV200	0	1	0	1	1	0.999981
LLN	LEVELLAND MUNICIPAL	TX	LPV	0	1	0	1	0	1
LNC	LANCASTER	TX	LPV200	0	1	0	1	0	1
LRD	LAREDO INTL	TX	LPV200	0	1	0	1	1	0.999962
LUD	DECATUR MUNICIPAL	TX	LPV	0	1	0	1	1	0.999996
LVJ	PEARLAND RGNL	TX	LPV	0	1	0	1	1	0.999931
LXY	MEXIA-LIMESTONE CO	TX	LP	0	1	0	1	1	0.999989
MAF	MIDLAND INTL	TX	LPV200	0	1	0	1	1	0.999958
MDD	MIDLAND AIRPARK	TX	LPV	0	1	0	1	1	0.999969
MFE	MC ALLEN MILLER INTL	TX	LPV	0	1	1	0.999996	1	0.999905
MNZ	HAMILTON MUNICIPAL	TX	LPV	0	1	0	1	1	0.999989
OCH	A L MANGHAM JR RGNL	TX	LPV200	0	1	0	1	1	0.999958
ODO	ODESSA-SCHLEMEYER FIELD	TX	LPV200	0	1	0	1	1	0.999962
ONY	OLNEY MUNICIPAL	TX	LPV	0	1	0	1	0	1
ORG	ORANGE COUNTY	TX	LPV	0	1	0	1	1	0.999935
PEQ	PECOS MUNICIPAL	TX	LPV200	0	1	0	1	1	0.999958
PIL	PORT ISABEL-CAMERON COUNTY	TX	LPV	0	1	0	1	1	0.999889
PPA	PERRY LEFORS FIELD	TX	LPV	0	1	0	1	3	0.999920
PRX	COX FIELD	TX	LPV	0	1	0	1	9	0.999966
PSX	PALACIOS MUNICIPAL	TX	LPV	0	1	0	1	1	0.999939
PVW	HALE COUNTY	TX	LPV	0	1	0	1	0	1
RAS	MUSTANG BEACH	TX	LPV	0	1	0	1	1	0.999943
RBD	DALLAS EXECUTIVE	TX	LPV	0	1	0	1	0	1
RBO	NUECES COUNTY	TX	LP	0	1	0	1	1	0.999954
RKP	ARANSAS COUNTY	TX	LPV	0	1	0	1	1	0.999950
RYW	LAGO VISTA TX - RUSTY ALLEN	TX	LP	0	1	0	1	1	0.999996
SAT	SAN ANTONIO INTL	TX	LPV200	0	1	0	1	1	0.999958
SGR	SUGAR LAND RGNL	TX	LPV200	0	1	0	1	1	0.999943

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
SJT	SAN ANGELO RGNL/MATHIS FLD	TX	LPV	0	1	0	1	1	0.999935
SLR	SULPHUR SPRINGS MUNICIPAL	TX	LPV200	0	1	0	1	0	1
SNK	WINSTON FIELD	TX	LPV200	0	1	0	1	1	0.999985
SWW	AVENGER FIELD	TX	LPV	0	1	0	1	1	0.999958
T41	LA PORTE MUNICIPAL	TX	LPV	0	1	0	1	1	0.999928
T59	WHEELER MUNICIPAL	TX	LP	0	1	0	1	4	0.999897
T78	LIBERTY MUNICIPAL	TX	LP	0	1	0	1	1	0.999931
T82	GILLESPIE COUNTY	TX	LPV	0	1	0	1	1	0.999989
TFP	T P MC CAMPBELL	TX	LPV	0	1	0	1	1	0.999947
TKI	COLLIN COUNTY RGNL AT MC KINNEY	TX	LPV200	0	1	0	1	0	1
TME	HOUSTON EXECUTIVE	TX	LPV	0	1	0	1	1	0.999950
TPL	DRAUGHON-MILLER CENTRAL TEXAS RGNL	TX	LPV200	0	1	0	1	1	0.999996
TRL	TERRELL MUNICIPAL	TX	LPV	0	1	0	1	0	1
TYR	TYLER POUNDS RGNL	TX	LPV200	0	1	0	1	1	0.999989
UTS	HUNTSVILLE MUNICIPAL	TX	LPV	0	1	0	1	1	0.999958
VCT	VICTORIA RGNL	TX	LPV200	0	1	0	1	1	0.999958
XBP	BRIDGEPORT MUNICIPAL	TX	LPV	0	1	0	1	1	0.999996
BCE	BRYCE CANYON	UT	LPV	0	1	0	1	0	1
BDG	BLANDING MUNICIPAL	UT	LPV	0	1	0	1	0	1
BMC	BRIGHAM CITY	UT	LP	0	1	0	1	0	1
DTA	DELTA MUNICIPAL	UT	LP	0	1	0	1	0	1
ENV	WENDOVER	UT	LPV	0	1	0	1	0	1
FOM	FILLMORE MUNICIPAL	UT	LPV	0	1	0	1	0	1
LGU	LOGAN-CACHE	UT	LPV	0	1	0	1	0	1
OGD	OGDEN-HINCKLEY	UT	LPV	0	1	0	1	0	1
PUC	CARBON COUNTY RGNL/BUCK DAVIS FIELD	UT	LP	0	1	0	1	0	1
PVU	PROVO MUNICIPAL	UT	LPV200	0	1	0	1	0	1
SGU	ST GEORGE MUNICIPAL	UT	LPV	0	1	0	1	0	1
SLC	SALT LAKE CITY INTL	UT	LP	0	1	0	1	0	1
U14	NEPHI MUNICIPAL	UT	LPV	0	1	0	1	0	1
U55	PANGUITCH MUNICIPAL	UT	LPV200	0	1	0	1	0	1
VEL	VERNAL	UT	LP	0	1	0	1	0	1
0VG	LEE COUNTY	VA	LPV	0	1	0	1	1	0.999809
8W2	NEW MARKET	VA	LP	0	1	0	1	1	0.999737
AVC	MECKLENBURG-BRUNSWICK RGNL	VA	LPV	1	0.999985	1	0.999985	2	0.999493
BCB	VIRGINIA TECH/MONTGOMERY EXECUTIVE	VA	LPV	0	1	0	1	1	0.999779
CHO	CHARLOTTESVILLE-ALBEMARLE	VA	LPV	0	1	0	1	1	0.999748

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
CJR	CULPEPER RGNL	VA	LPV	0	1	0	1	2	0.999576
CPK	CHESAPEAKE RGNL	VA	LPV200	2	0.999836	1	0.999695	2	0.999447
DAN	DANVILLE RGNL	VA	LPV200	0	1	0	1	1	0.999794
EMV	EMPORIA-GREENSVILLE RGNL	VA	LPV200	1	0.999943	1	0.999943	2	0.999458
FCI	CHESTERFIELD COUNTY	VA	LPV	1	0.999916	1	0.999916	2	0.999458
FKN	FRANKLIN MUN-JOHN BEVERLY ROSE	VA	LPV	1	0.999939	1	0.999687	2	0.999451
FVX	FARMVILLE RGNL	VA	LPV	0	1	0	1	1	0.999767
FYJ	MIDDLE PENINSULA RGNL	VA	LPV	1	0.999908	1	0.999706	2	0.999428
HLX	TWIN COUNTY	VA	LPV	0	1	0	1	1	0.999790
HSP	INGALLS FIELD	VA	LPV	0	1	0	1	1	0.999760
HWY	WARRENTON-FAUQUIER	VA	LPV200	0	1	0	1	2	0.999576
JFZ	TAZEWELL COUNTY	VA	LPV	0	1	0	1	1	0.999794
JYO	LEESBURG EXECUTIVE	VA	LPV	0	1	0	1	2	0.999706
LKU	LOUISA COUNTY/FREEMAN FIELD	VA	LPV	0	1	0	1	2	0.999554
LNP	LONESOME PINE	VA	LPV	0	1	0	1	1	0.999798
LUA	LURAY CAVERNS	VA	LP	0	1	0	1	1	0.999737
LYH	LYNCHBURG RGNL/PRESTON GLENN FLD	VA	LPV	0	1	0	1	1	0.999767
MFV	ACCOMACK COUNTY	VA	LPV	1	0.999721	1	0.999721	2	0.999420
MKJ	MOUNTAIN EMPIRE	VA	LPV	0	1	0	1	1	0.999790
MTV	BLUE RIDGE	VA	LPV	0	1	0	1	1	0.999794
OPF	HANOVER COUNTY MUNICIPAL	VA	LPV	1	0.999905	1	0.999905	2	0.999454
OKV	WINCHESTER RGNL	VA	LPV200	0	1	0	1	1	0.999721
ORF	NORFOLK INTL	VA	LPV200	1	0.999702	1	0.999699	2	0.999439
PHF	NEWPORT NEWS/WILLIAMSBURG INTL	VA	LPV200	1	0.999920	1	0.999702	2	0.999435
PSK	NEW RIVER VALLEY	VA	LPV200	0	1	0	1	1	0.999783
PTB	DINWIDDIE COUNTY	VA	LPV	1	0.999924	1	0.999924	2	0.999458
RIC	RICHMOND INTL	VA	LPV200	1	0.999912	1	0.999912	2	0.999462
RMN	STAFFORD RGNL	VA	LPV	1	0.999996	1	0.999996	2	0.999554
ROA	ROANOKE RGNL/WOODRUM FIELD	VA	LPV	0	1	0	1	1	0.999775
SFQ	SUFFOLK EXECUTIVE	VA	LP	1	0.999939	1	0.999691	2	0.999447
SHD	SHENANDOAH VALLEY RGNL	VA	LPV200	0	1	0	1	1	0.999744
VJI	VIRGINIA HIGHLANDS	VA	LPV	0	1	0	1	1	0.999805
W63	MARKS MUNICIPAL	VA	LP	0	1	0	1	1	0.999786
W78	WILLIAM M TUCK	VA	LPV	0	1	0	1	1	0.999783
XSA	TAPPAHANNOCK-ESSEX COUNTY	VA	LPV	1	0.999897	1	0.999897	2	0.999420
BTV	BURLINGTON INTL	VT	LPV200	0	1	1	0.999859	1	0.999626
FSO	FRANKLIN COUNTY STATE	VT	LPV	0	1	1	0.999840	1	0.999626

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
MPV	EDWARD F KNAPP STATE	VT	LPV	0	1	1	0.999855	1	0.999618
RUT	RUTLAND-SOUTHERN VERMONT RGNL	VT	LPV	0	1	1	0.999874	1	0.999615
ALW	WALLA WALLA RGNL	WA	LPV	0	1	0	1	1	0.999901
AWO	ARLINGTON MUNICIPAL	WA	LPV200	0	1	2	0.999939	2	0.999138
BLI	BELLINGHAM INTL	WA	LPV200	0	1	2	0.999767	2	0.999107
BVS	SKAGIT RGNL	WA	LPV	0	1	2	0.999863	2	0.999138
CLM	WILLIAM R FAIRCHILD INTL	WA	LPV	0	1	1	0.999989	3	0.999355
CLS	CHEHALIS-CENTRALIA	WA	LPV	0	1	0	1	4	0.999756
DEW	DEER PARK	WA	LPV	0	1	1	0.999714	2	0.999607
EPH	EPHRATA MUNICIPAL	WA	LPV	0	1	1	0.999928	2	0.999615
FHR	FRIDAY HARBOR	WA	LPV	0	1	2	0.999851	2	0.999138
GEG	SPOKANE INTL	WA	LPV200	0	1	1	0.999893	2	0.999626
HQM	BOWERMAN	WA	LPV200	0	1	0	1	3	0.999538
MWH	GRANT CO INTL	WA	LPV200	0	1	1	0.999928	2	0.999618
OLM	OLYMPIA RGNL	WA	LPV	0	1	0	1	4	0.999664
OTH	SOUTHWEST OREGON RGNL	WA	LPV	0	1	0	1	13	0.999546
PAE	SNOHOMISH COUNTY (PAINE FLD)	WA	LPV200	0	1	0	1	3	0.999428
PSC	TRI-CITIES	WA	LPV200	0	1	0	1	2	0.999870
PWT	BREMERTON NATIONAL	WA	LPV	0	1	0	1	3	0.999496
RLD	RICHLAND	WA	LPV	0	1	0	1	2	0.999863
RNT	RENTON MUNICIPAL	WA	LPV	0	1	0	1	3	0.999485
SEA	SEATTLE-TACOMA INTL	WA	LPV200	0	1	0	1	3	0.999504
TDO	ED CARLSON MEMORIAL - SOUTH LEWIS CO	WA	LPV	0	1	0	1	3	0.999805
TIW	TACOMA NARROWS	WA	LPV	0	1	0	1	3	0.999504
YKM	YAKIMA AIR TERMINAL/MCALLISTER FIELD	WA	LPV200	0	1	0	1	2	0.999779
57C	EAST TROY MUNICIPAL	WI	LPV	0	1	0	1	1	0.999893
82C	MAUSTON-NEW LISBON UNION	WI	LP	0	1	0	1	2	0.999821
8D1	NEW HOLSTEIN MUNICIPAL	WI	LPV	0	1	0	1	2	0.999889
ARV	LAKELAND/NOBLE F. LEE MEMORIAL FIELD	WI	LPV	1	0.999737	1	0.999737	4	0.999603
ASX	JOHN F. KENNEDY MEMORIAL	WI	LPV	1	0.999729	1	0.999710	5	0.999241
ATW	OUTAGAMIE COUNTY RGNL	WI	LPV200	0	1	0	1	2	0.999817
AUW	WAUSAU DOWNTOWN	WI	LPV200	0	1	1	0.999943	3	0.999771
BCK	BLACK RIVER FALLS AREA	WI	LPV	0	1	1	0.999886	2	0.999687
C29	MIDDLETON MUNICIPAL-MOREY FIELD	WI	LPV	0	1	0	1	1	0.999920
C35	REEDSBURG MUNICIPAL	WI	LP	0	1	0	1	2	0.999874
CLI	CLINTONVILLE MUNICIPAL	WI	LPV	0	1	0	1	2	0.999821
CMY	SPARTA/FORT MC COY	WI	LPV	0	1	1	0.999889	2	0.999748
CWA	CENTRAL WISCONSIN	WI	LPV200	0	1	1	0.999947	2	0.999798

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
DLL	BARABOO WISCONSIN DELLS	WI	LPV	0	1	0	1	2	0.999889
EAU	CHIPPEWA VALLEY RGNL	WI	LPV200	0	1	1	0.999817	2	0.999657
EGV	EAGLE RIVER UNION	WI	LPV	1	0.999958	2	0.999882	3	0.999603
ENW	KENOSHA RGNL	WI	LPV200	0	1	0	1	1	0.999886
ETB	WEST BEND MUNICIPAL	WI	LPV	0	1	0	1	1	0.999889
EZS	SHAWANO MUNICIPAL	WI	LPV	0	1	0	1	2	0.999824
FLD	FOND DU LAC COUNTY	WI	LPV	0	1	0	1	1	0.999901
GRB	AUSTIN STRAUBEL INTL	WI	LPV200	0	1	0	1	2	0.999817
HXF	HARTFORD MUNICIPAL	WI	LPV	0	1	0	1	1	0.999893
HYR	SAWYER COUNTY	WI	LPV	1	0.999718	1	0.999710	5	0.999431
JVL	SOUTHERN WISCONSIN RGNL	WI	LPV200	0	1	0	1	1	0.999905
LNR	TRI-COUNTY RGNL	WI	LPV	0	1	0	1	2	0.999832
LSE	LA CROSSE MUNICIPAL	WI	LPV	0	1	1	0.999878	2	0.999699
LUM	MENOMONIE MUNICIPALCIPAL-SCORE FIELD	WI	LPV	1	0.999889	1	0.999817	3	0.999649
MDZ	TAYLOR COUNTY	WI	LPV	0	1	1	0.999901	3	0.999706
MFI	MARSHFIELD MUNICIPAL	WI	LPV	0	1	1	0.999908	2	0.999783
MKE	GENERAL MITCHELL INTL	WI	LPV200	0	1	0	1	1	0.999886
MRJ	IOWA COUNTY	WI	LPV200	0	1	0	1	2	0.999836
MSN	DANE COUNTY RGNL-TRUAX FIELD	WI	LPV200	0	1	0	1	1	0.999912
MTW	MANITOWOC COUNTY	WI	LPV200	0	1	0	1	2	0.999844
MWC	LAWRENCE J TIMMERMAN	WI	LPV	0	1	0	1	1	0.999889
OCQ	J DOUGLAS BAKE MEML	WI	LP	0	1	0	1	2	0.999828
OSH	WITTMAN RGNL	WI	LPV	0	1	0	1	2	0.999828
OVS	BOSCOBEL	WI	LPV	0	1	0	1	2	0.999828
PBH	PRICE COUNTY	WI	LPV	1	0.999725	1	0.999725	4	0.999611
PCZ	WAUPACA MUNICIPAL	WI	LPV	0	1	0	1	2	0.999817
PVB	PLATTEVILLE MUNICIPALCIPAL	WI	LPV	0	1	0	1	2	0.999824
RAC	JOHN H. BATTEN	WI	LPV	0	1	0	1	1	0.999882
RCX	RUSK COUNTY	WI	LPV	1	0.999718	1	0.999718	4	0.999618
RHI	RHINELANDER-ONEIDA COUNTY	WI	LPV200	1	0.999989	2	0.999908	3	0.999622
RNH	NEW RICHMOND RGNL	WI	LPV	1	0.999710	1	0.999710	3	0.999569
RPD	RICE LAKE RGNL - CARL'S FIELD	WI	LPV	1	0.999710	1	0.999710	3	0.999519
RRL	MERRILL MUNICIPAL	WI	LPV	0	1	1	0.999931	3	0.999706
SBM	SHEBOYGAN COUNTY MEMORIAL	WI	LPV200	0	1	0	1	1	0.999886
STE	STEVENS POINT MUNICIPAL	WI	LPV200	0	1	1	0.999985	2	0.999824
SUE	DOOR COUNTY CHERRYLAND	WI	LPV	0	1	0	1	2	0.999813
SUW	RICHARD I BONG	WI	LP	1	0.999710	1	0.999634	5	0.998989

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
TKV	TOMAHAWK RGNL	WI	LP	1	0.999996	2	0.999912	3	0.999626
UES	WAUKESHA COUNTY	WI	LPV200	0	1	0	1	1	0.999893
UNU	DODGE COUNTY	WI	LPV	0	1	0	1	1	0.999901
VIQ	NEILLSVILLE MUNICIPAL	WI	LPV	0	1	1	0.999893	2	0.999702
Y50	WAUTOMA MUNICIPAL	WI	LP	0	1	0	1	2	0.999817
3I2	MASON COUNTY	WV	LPV	0	1	0	1	1	0.999748
BKW	RALEIGH COUNTY MEMORIAL	WV	LPV200	0	1	0	1	1	0.999767
BLF	MERCER COUNTY	WV	LPV	0	1	0	1	1	0.999783
CKB	NORTH CENTRAL WEST VIRGINIA	WV	LPV	0	1	0	1	1	0.999721
CRW	YEAGER	WV	LPV200	0	1	0	1	1	0.999756
HLG	WHEELING OHIO CO	WV	LPV200	0	1	0	1	1	0.999725
HTS	TRI-STATE/MILTON J. FERGUSON FIELD	WV	LPV200	0	1	0	1	1	0.999767
I18	JACKSON COUNTY	WV	LPV200	0	1	0	1	1	0.999748
LWB	GREENBRIER VALLEY	WV	LPV	0	1	0	1	1	0.999763
MGW	MORGANTOWN MUNICIPAL-WALTER L. BILL HART FIELD	WV	LPV200	0	1	0	1	1	0.999718
MRB	EASTERN WV RGNL/SHEPHERD	WV	LPV	0	1	0	1	1	0.999710
PKB	MID-OHIO VALLEY RGNL	WV	LPV	0	1	0	1	1	0.999741
SXL	SUMMERSVILLE	WV	LP	0	1	0	1	1	0.999756
USW	BOGGS FIELD	WV	LP	0	1	0	1	1	0.999741
W22	UPSHUR COUNTY RGNL	WV	LPV	0	1	0	1	1	0.999733
7V6	CAMP GUERNSEY	WY	LP	0	1	0	1	2	0.999741
COD	YELLOWSTONE RGNL	WY	LPV	0	1	0	1	1	0.999767
CPR	NATRONA COUNTY INTL	WY	LPV	0	1	0	1	1	0.999889
CYS	CHEYENNE RGNL/JERRY OLSON FIELD	WY	LPV	0	1	0	1	1	0.999992
DGW	CONVERSE COUNTY	WY	LPV200	0	1	0	1	2	0.999752
ECS	MONDELL FIELD	WY	LPV	0	1	1	0.999786	3	0.999641
EVW	EVANSTON-UINTA COUNTY BURNS FIELD	WY	LPV	0	1	0	1	0	1
GCC	GILLETTE-CAMPBELL COUNTY	WY	LPV	0	1	1	0.999767	3	0.999649
JAC	JACKSON HOLE	WY	LPV	0	1	0	1	0	1
LAR	LARAMIE RGNL	WY	LPV	0	1	0	1	0	1
PNA	RALPH WENZ FIELD	WY	LPV	0	1	0	1	0	1
RIW	RIVERTON RGNL	WY	LPV200	0	1	0	1	1	0.999962
RKS	ROCK SPRINGS-SWEETWATER COUNTY	WY	LPV200	0	1	0	1	0	1
RWL	RAWLINS MUNICIPAL/HARVEY FIELD	WY	LPV	0	1	0	1	0	1
SAA	SHIVELY FIELD	WY	LPV	0	1	0	1	0	1
SHR	SHERIDAN COUNTY	WY	LPV	0	1	1	0.999756	3	0.999687
WRL	WORLAND MUNICIPAL	WY	LPV	0	1	0	1	1	0.999786

Airport Id	Airport Name	State/Providence	Service	LP Outages	LP Avail	LPV Outages	LPV Avail	LPV 200 Outages	LPV 200 Avail
CYQH	WATSON LAKE	YT	LPV	1	0.999557	2	0.999340	3	0.999023
CYXY	WHITEHORSE / ERIK NIELSEN INTL	YT	LPV	1	0.999565	2	0.999500	3	0.999096

Figure 8-1 WAAS LP Availability at Airports in the US and Canada with GPS RNAV Instrument Approach Procedures

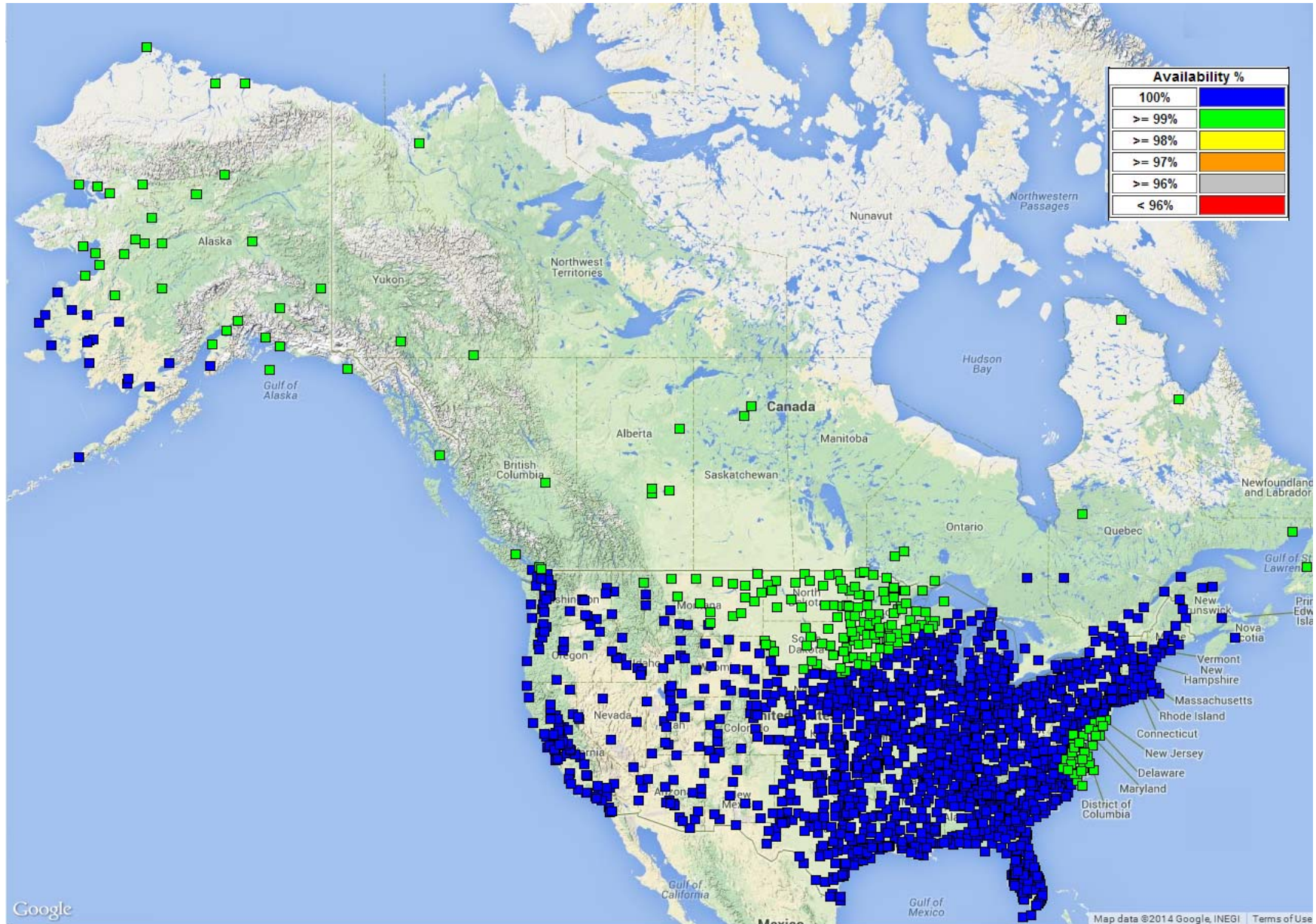


Figure 8-2 WAAS LP Outages at Airports in the US and Canada with GPS RNAV Instrument Approach Procedures

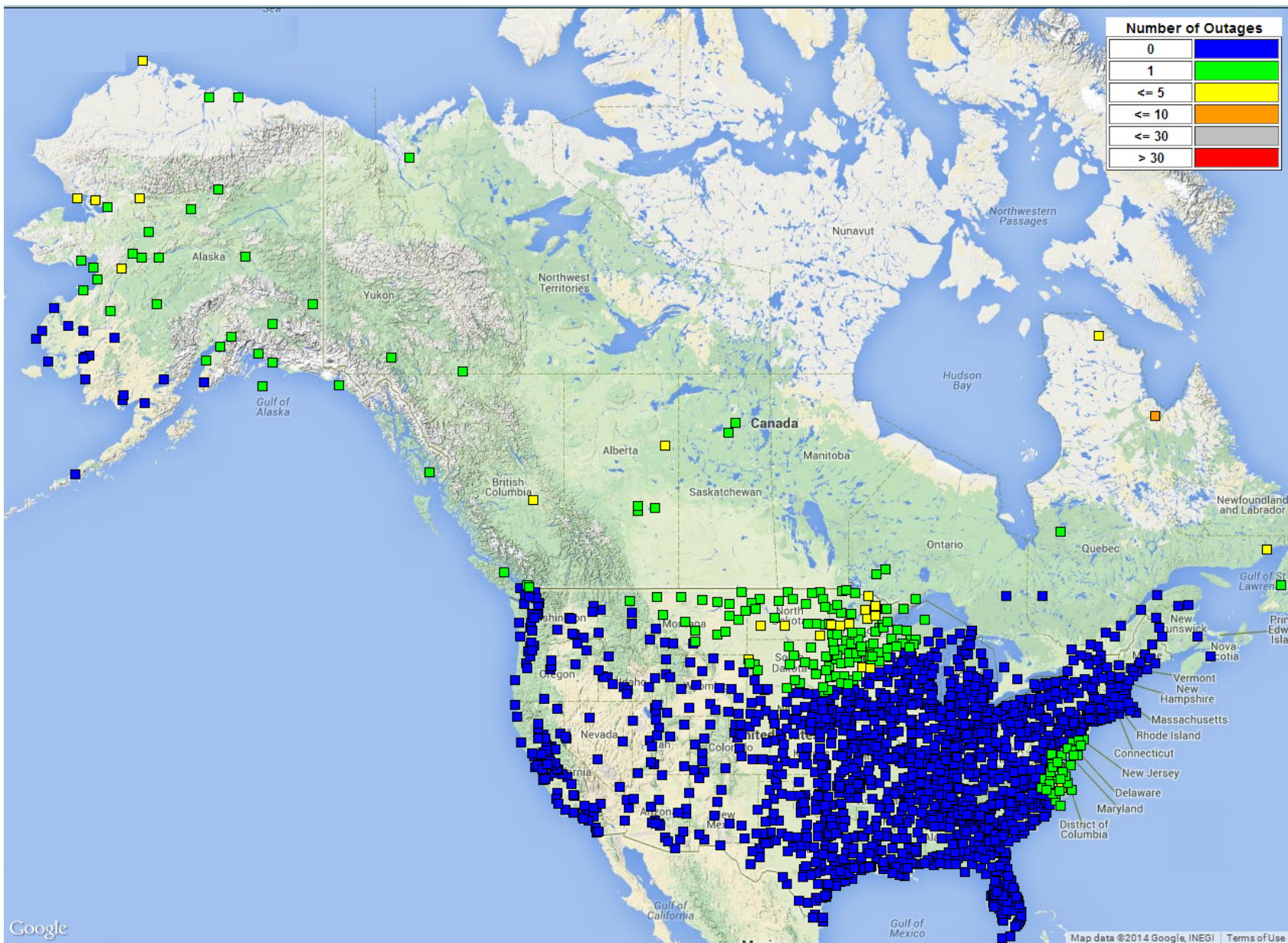


Figure 8-3 WAAS LPV Availability Airports in the US and Canada with GPS RNAV Instrument Approach Procedures

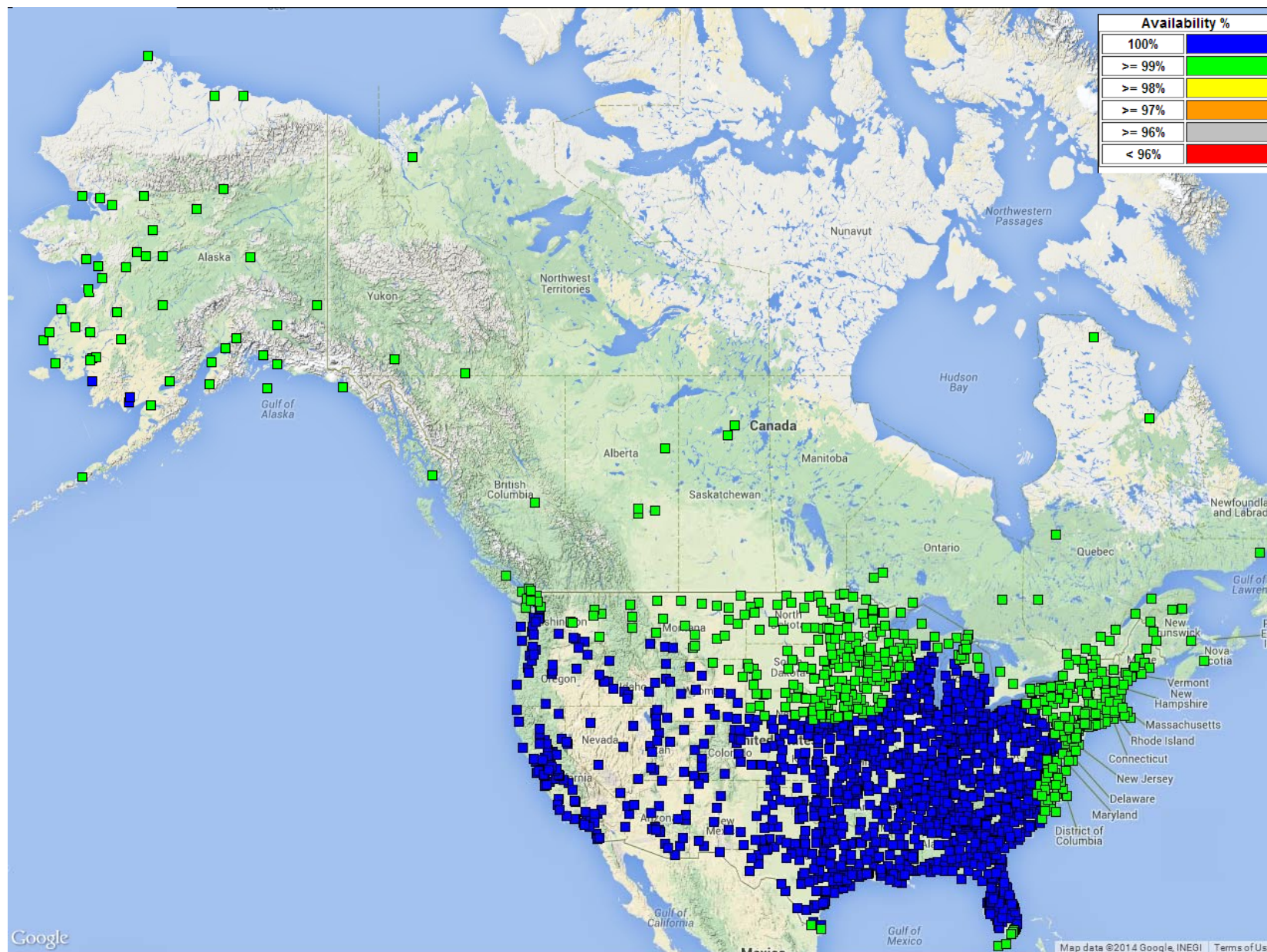


Figure 8-4 WAAS LPV Outages at Airports in the US and Canada with GPS RNAV Instrument Approach Procedures

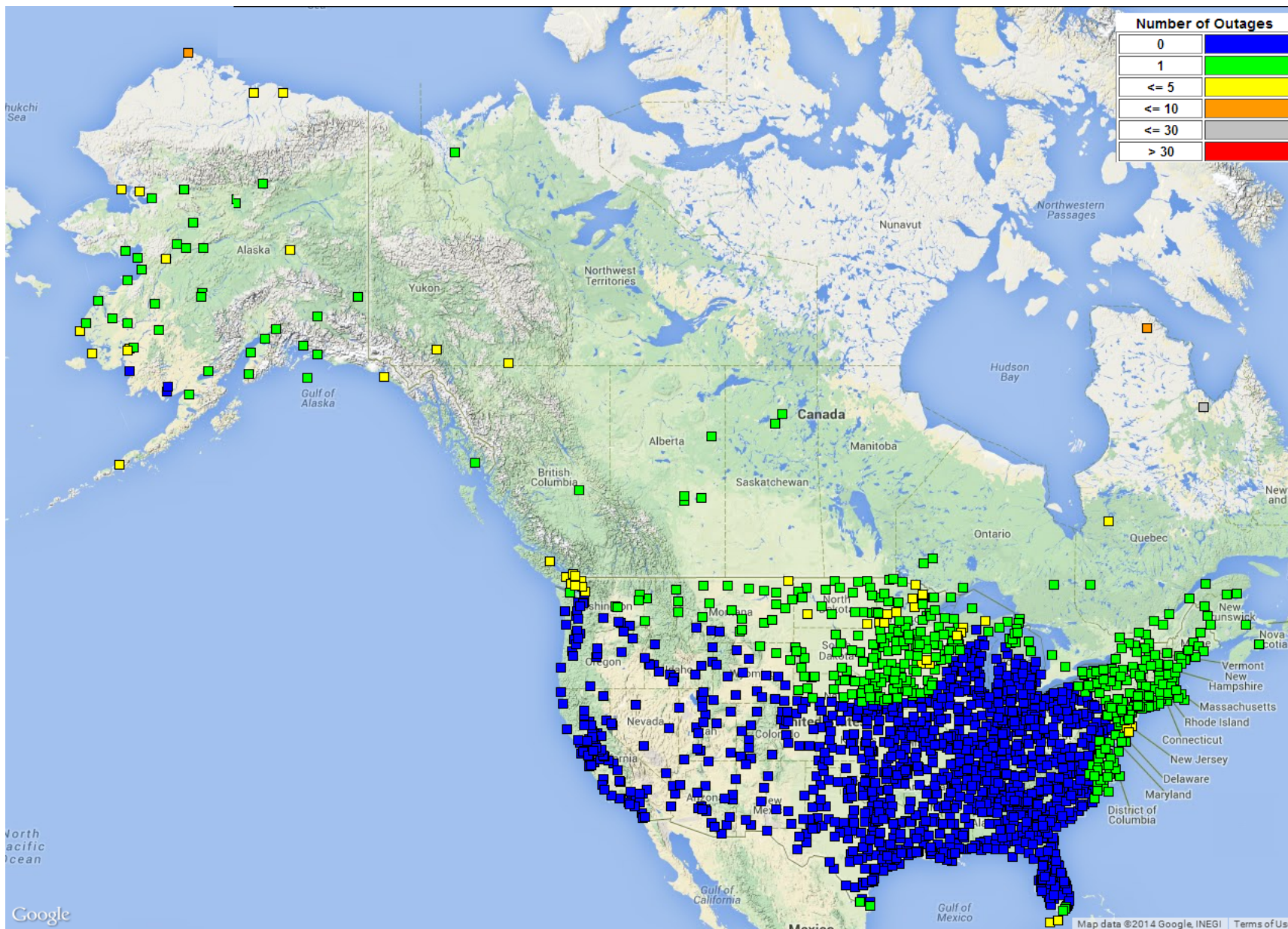


Figure 8-5 WAAS LPV 200 Availability at Airports in the US and Canada with GPS RNAV Instrument Approach Procedures

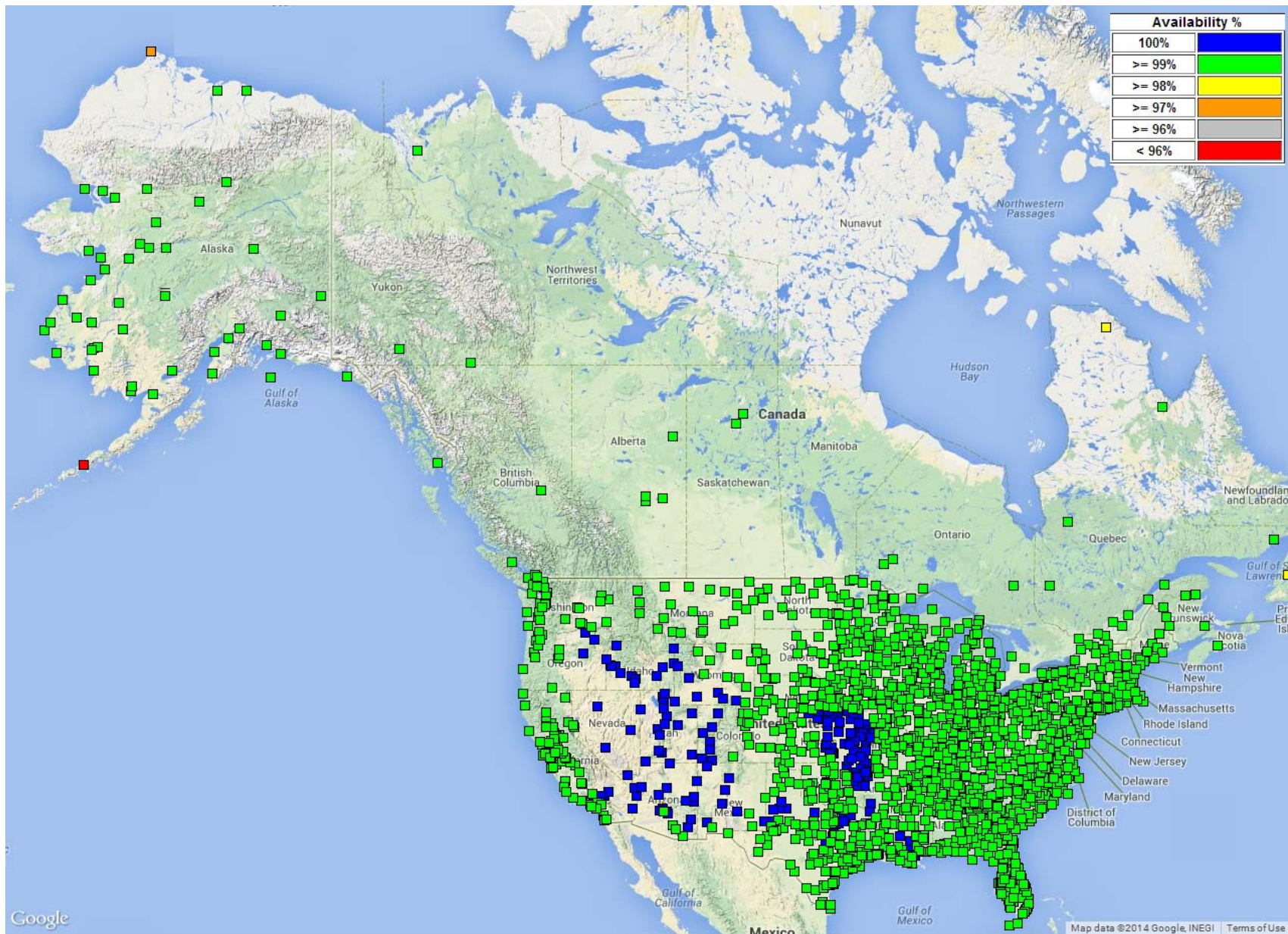
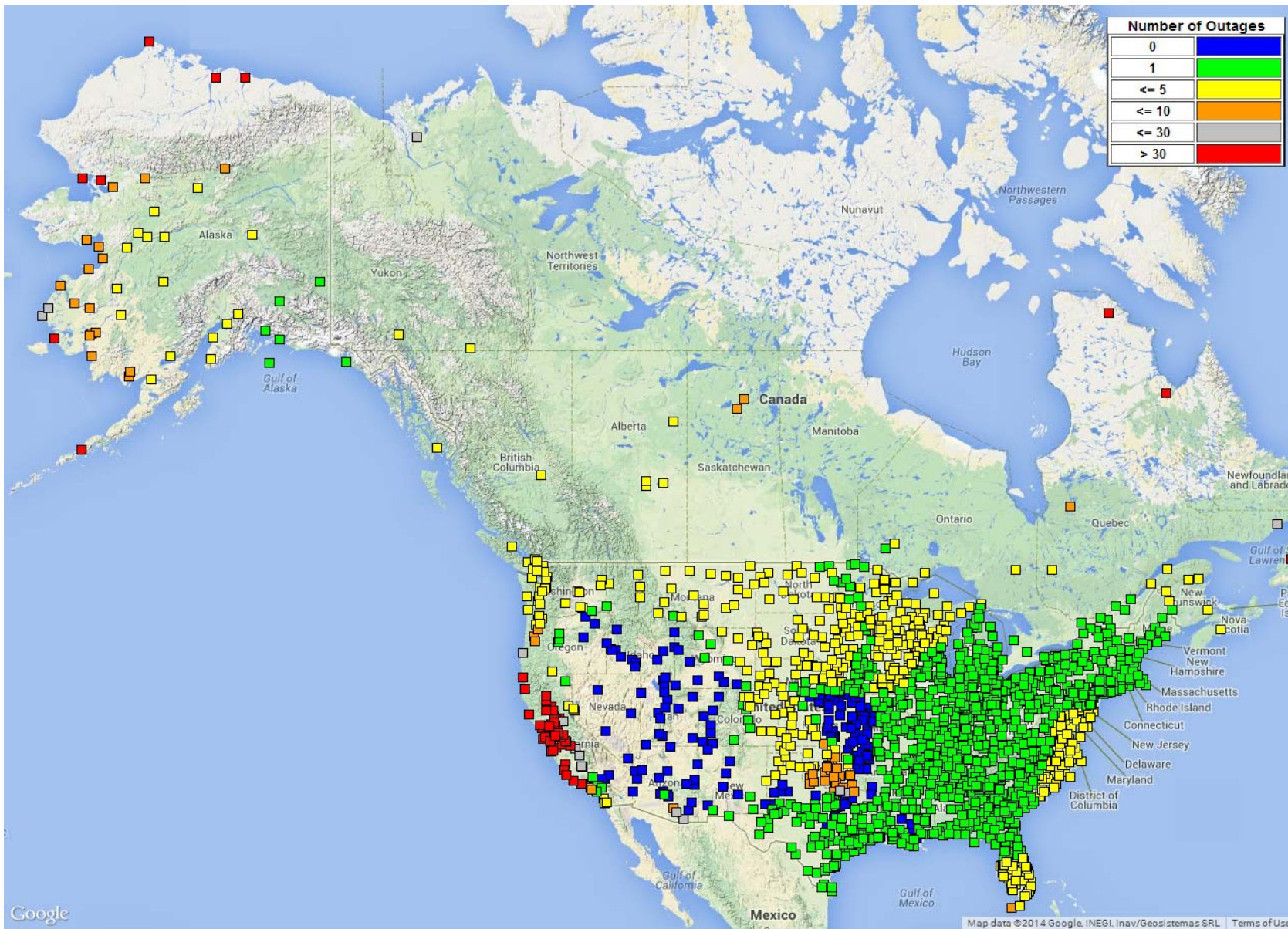


Figure 8-6 WAAS LPV 200 Outages at Airports in the US and Canada with GPS RNAV Instrument Approach Procedures



9.0 WAAS DETERMINISTIC CODE NOISE AND MULTIPATH (CNMP) BOUNDING ANALYSIS

WAAS utilizes a deterministic model to estimate the residual CNMP noise after the application of standard dual frequency carrier smoothing techniques to minimize the effects of multipath and code noise. This analysis performs an assessment of how well that deterministic model bounds the actual errors. This analysis is periodically performed as part of the WAAS Test Team's off-line monitoring to ensure that there are no drastic detrimental changes to the multipath environment at the WAAS Reference Stations (WRSs). This analysis also ensures that WAAS system is not indefinitely exposed to conspiring receiver failure symptoms that would invalidate the CNMP bounding estimate in a manner that would exceed the assumption that no more than one reference station is conspiring to deceive the WAAS monitors at any time by underestimating the residual measurement noise the safety monitors. Although some failures mechanisms that cause CNMP bounding issues are occasionally seen, no "conspiring" errors have ever been detected. That is, data has caused the safety monitors to trip unnecessarily versus missing a necessary trip.

The analysis post processes measurement data to estimate the pseudorange code to carrier ambiguity for each entire arc of measurements for each satellite pass. The ambiguity estimate is then used to level the carrier measurement. The leveled carrier is then used as a multipath free truth estimate. The WAAS real time deterministic CNMP smoothing algorithm is then applied to the original measurements. The difference between the smoothed measurements and the leveled truth measurements is compared to the deterministic noise estimates. Only arcs with continuous carrier phase greater in length than 7200 seconds are utilized for this analysis to minimize the impacts of non-zero mean multipath biasing the truth estimates. The WAAS dual frequency cycle slip detector algorithm is used to detect any discontinuities in the carrier phase.

Statistics are calculated on how well the 0.1 multiples of the deterministically estimated standard deviation bounds the difference between the leveled truth and the real time smoothed measurements. Those statistics are then compared to a theoretical Gaussian distribution and an extensive set of plots are generated and manually reviewed. Table 9-1 recaps the results of that manual analysis.

Table 9-1 CNMP Bounding Statistics

WAAS Site	WRE	Jul 13	Aug 13	Sep 13	Oct 13	Nov 13	Dec 13	Jan 14	Feb 14	Mar 14	Apr 14	May 14	Jun 14
Albuquerque	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Anchorage	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Atlanta	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Barrow	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Bethel	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Billings	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Boston	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Chicago	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Cleveland	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Cold Bay	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Dallas	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Denver	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Fairbanks	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Gander	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Goose Bay	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Honolulu	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Houston	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Iqaluit	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Jacksonville	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●

- Excellent - 3.29σ bounded 100%
- Good - 4σ bounded 100%
- Fair - 4σ bounded 100% with one worst satellite excluded (Requires manual review if symptoms repeat from month to month)
- Poor – Requires manual review
- No data available

WAAS Site	WRE	Jul 13	Aug 13	Sep 13	Oct 13	Nov 13	Dec 13	Jan 14	Feb 14	Mar 14	Apr 14	May 14	Jun 14
Juneau	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Kansas City	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Kotzebue	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Los Angeles	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Memphis	A	●	●	●	●	●	●	—	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Merida	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Mexico City	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	—	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Miami	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Minneapolis	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
New York	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Oakland	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Puerto Vallarta	A	●	—	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Salt Lake City	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
San Jose Del Cabo	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
San Juan	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Seattle	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Tapachula	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Washington, DC	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●
Winnipeg	A	●	●	●	●	●	●	●	●	●	●	●	●
	B	●	●	●	●	●	●	●	●	●	●	●	●
	C	●	●	●	●	●	●	●	●	●	●	●	●

- Excellent - 3.29σ bounded 100%
- Good - 4σ bounded 100%
- Fair - 4σ bounded 100% with one worst satellite excluded (Requires manual review if symptoms repeat from month to month)
- Poor – Requires manual review
- No data available

10.0 WAAS REFERENCE STATION SURVEY VALIDATION

Antenna L1 phase center position surveys were performed for all the WAAS Reference Station antennas using 25 hour sets of data from 23:00 on 6/27/14 to 23:59:30 on 6/28/14.

Duplicate surveys were performed using both the National Geodetic Survey (NGS) Online Positioning User Service (OPUS) and the Canadian Spatial Reference System (CSRS) Precise Point Positioning (PPP) service. The IGS08 reference frame is used for the OPUS solutions. A value of -0.4445 meters was used for the antenna reference point (ARP) to antenna phase center (APC) offset for the MicroPulse MPL-WAAS-2225W WAAS antennas in the processing.

The overall RMS quality metrics reported by OPUS were all ≤ 2.6 cm. The CSRS surveys' RSSs of the reported ECEF sigmas for the 6/28/14 data set were all ≤ 10 mm. The OPUS and CSRS surveys for the 6/28/14 data set agreed to an average of 1.6 cm. with a standard deviation of 7 mm. The maximum of difference was 3.8 cm. for Fort Worth thread C (ZFW3).

The OPUS positions were compared to the positions in the currently fielded WAAS software, Build W7.010 and in Build W7.012 which will be fielded this August. Build W7.012 contains updated antenna positions that have been extrapolated forward in time to maximize the time interval before the next update is required. The OPUS surveys agree with the Build W7.010 positions to better or equal than 6.2 cm. for all sites except Mexico City (MMX) which were 24.0 cm, 24.4 cm, and 26.1 cm respectively for MMX1, MMX2, and MMX3. The non-MMX maximum was 6.2 cm at Honolulu thread A, HNL1. The OPUS surveys agree with the Build W7.012 positions to better or equal than 7.1 cm. for all sites except Mexico City (MMX) which were 17.7 cm, 17.3 cm and 15.6 cm respectively for MMX1, MMX2, and MMX3. The non-MMX maximum was 7.1 cm at Honolulu thread C, HNL3. Note most of the Mexico City differences are in height. For Build W7.010 the software position is above the OPUS position, for Build W7.012 the software position is below the OPUS position.

Table 10-1 lists the WAAS antenna L1 phase center positions as of 6/28/14.

Figures 10-1 to 10-3 show the RSS of the ECEF differences between the 6/28/14 OPUS survey antenna phase center locations and the locations in the Build W7.010 software. Each reference station has three independent strings of WAAS receiving equipment (WRE). A surveyed antenna phase center location is required for each WRE. All three strings of a reference station are shown in the three figures. For example, BET1 identifies the RSS of the ECEF deltas for the Bethel WRE string 1(A). The next two bars in the chart are Bethel string 2(B) and Bethel string 3(C). Figure 10-4 to 10-6 shows the OPUS surveys overall RMS quality indications.

The "take action" threshold established by the WAAS Integrity Performance Panel (WIPP) is 25 cm. for Mexico City and 10 cm. for the remaining sites. The large MMX allowance is required because of the rapid subsidence in Mexico City (approximately 28 to 30 cm / year).

Figures 10-7 to 10-9 show the RSS of the ECEF difference between the positions obtained from OPUS and the positions obtained from CSRS. Note that that OPUS positions are in IGS08 and the CSRS positions are in ITRF-2008. Figures 10-10 to 10-12 show the RSS of the ECEF sigma's survey qualities reported by CSRS.

Figures 10-13 to 10-15 show the RSS of the ECEF difference between the positions obtained from OPUS and the positions in the Build W7.012 software. The local velocities have been used to interpolate the positions forward in time to maximize the duration of time before the next software update for antenna positions is required. The difference on 6/28/14 for Mexico City is 17 cm, which is below the 25 cm requirement for Mexico City. That error will continue to shrink over time until it passes through zero and begins to grow again. The next largest outliers, but still under the 10 cm requirement, are at Hawaii, which is the 2nd quickest moving site.

Table 10-1 WAAS Antenna Positions (OPUS IGS08) as of 3/26/14

WRE	X(m)	Y(m)	Z(m)	Latitude	Longitude	H(m)
BET1	-2965385.055	-972576.621	5543892.886	60.7879153527778	-161.8417250416670	52.177
BET2	-2965385.824	-972580.345	5543891.829	60.7878959083333	-161.8416644750000	52.177
BET3	-2965388.392	-972577.472	5543890.961	60.7878800055556	-161.8417292888890	52.173
BIL1	-1416445.893	-4223577.021	4550862.157	45.8037068277778	-108.5397232111110	1112.253
BIL2	-1416449.970	-4223574.875	4550862.869	45.8037160527778	-108.5397817027780	1112.248
BIL3	-1416441.590	-4223574.277	4550866.008	45.8037565777778	-108.5396819611110	1112.246
BRW1	-1886758.937	-809058.663	6018494.459	71.2827647638889	-156.7899249250000	15.559
BRW2	-1886756.353	-809055.921	6018495.640	71.2827974916667	-156.7899668388890	15.569
BRW3	-1886755.259	-809059.702	6018495.457	71.2827928527778	-156.7898578194440	15.551
CDB1	-3484099.071	-1084748.786	5213678.616	55.1923739333333	-162.7064047194440	49.697
CDB2	-3484105.708	-1084741.585	5213675.669	55.1923278750000	-162.7065436527780	49.672
CDB3	-3484111.987	-1084734.816	5213672.923	55.1922844194444	-162.7066744388890	49.691
FAI1	-2304741.828	-1448715.281	5748843.667	64.8096298138889	-147.8473410277780	149.925
FAI2	-2304741.352	-1448706.469	5748846.064	64.8096802972222	-147.8474927194440	149.927
FAI3	-2304732.820	-1448707.406	5748849.203	64.8097468611111	-147.8473804583330	149.905
HNL1	-5508637.113	-2234493.193	2303722.258	21.3129909305556	-157.9208286055560	24.663
HNL2	-5508656.277	-2234483.517	2303687.011	21.3126480055556	-157.9209844555560	25.008
HNL3	-5508647.699	-2234497.457	2303694.108	21.3127166138889	-157.9208288722220	25.064
JNU1	-2354254.910	-2388549.650	5407043.104	58.3625744722222	-134.5857072333330	16.098
JNU2	-2354252.825	-2388565.761	5407036.939	58.3624689194444	-134.5854886527780	16.100
JNU3	-2354239.601	-2388568.608	5407041.396	58.3625453666667	-134.5852936111110	16.089
MMD1	35070.405	-5959686.660	2264365.767	20.9319092888889	-89.6628408305556	29.113
MMD2	35065.487	-5959687.037	2264364.983	20.9319015500000	-89.6628881333333	29.158
MMD3	35065.151	-5959685.258	2264369.642	20.9319466000000	-89.6628912611111	29.159
MMX1	-948701.028	-5943935.057	2109212.533	19.4316537222222	-99.0683898083333	2235.016
MMX2	-948696.594	-5943934.878	2109214.955	19.4316769777778	-99.0683483972222	2234.996
MMX3	-948705.457	-5943935.228	2109210.098	19.4316303805556	-99.0684311833333	2235.023
MPR1	-1570142.222	-5759530.599	2238184.758	20.6790033555556	-105.2492032361110	10.974
MPR2	-1570139.401	-5759530.111	2238188.812	20.6790414833333	-105.2491783472220	11.271
MPR3	-1570143.505	-5759527.978	2238190.575	20.6790595027778	-105.2492217333330	10.979
MSD1	-1979519.819	-5523222.992	2493106.834	23.1604473500000	-109.7176491611110	104.280
MSD2	-1979521.384	-5523225.327	2493100.434	23.1603845361111	-109.7176558555560	104.269
MSD3	-1979525.834	-5523222.060	2493104.104	23.1604205944444	-109.7177075277780	104.265
MTP1	-254854.357	-6162909.152	1617805.074	14.7913661027778	-92.3679992222222	54.931
MTP2	-254850.735	-6162910.194	1617801.644	14.7913340722222	-92.3679652055555	54.917
MTP3	-254855.515	-6162910.312	1617800.115	14.7913199833333	-92.3680095250000	54.831
OTZ1	-2396056.044	-750356.176	5843502.503	66.8873319000000	-162.6113727527780	10.884
OTZ2	-2396052.876	-750354.350	5843504.037	66.8873667333333	-162.6113909138890	10.894
OTZ3	-2396052.855	-750358.285	5843503.541	66.8873554555556	-162.6113050777780	10.892

WRE	X(m)	Y(m)	Z(m)	Latitude	Longitude	H(m)
YFB1	1035381.413	-2634289.650	5696539.533	63.7314905250000	-68.5431841416667	10.019
YFB2	1035372.210	-2634296.051	5696538.174	63.7314642861111	-68.5434049222222	9.947
YFB3	1035366.138	-2634306.807	5696534.398	63.7313866333333	-68.5435989611111	10.009
YQX1	2430424.605	-3419640.390	4788223.839	48.9664901750000	-54.5976324666667	146.871
YQX2	2430432.572	-3419639.046	4788220.779	48.9664482361111	-54.5975331444444	146.874
YQX3	2430440.471	-3419637.682	4788217.774	48.9664070000000	-54.5974344222222	146.881
YWG1	-520164.387	-4083475.947	4855843.051	49.9005743472222	-97.2593977611111	222.114
YWG2	-520150.513	-4083468.885	4855850.439	49.9006773638889	-97.2592186222222	222.124
YWG3	-520152.392	-4083478.003	4855842.613	49.9005682111111	-97.2592285277778	222.117
YYR1	1885341.409	-3321428.367	5091171.664	53.3086471611111	-60.4194685472222	37.852
YYR2	1885344.366	-3321419.887	5091176.076	53.3087134666667	-60.4193671694444	37.856
YYR3	1885340.077	-3321413.068	5091182.079	53.3088036777778	-60.4193726250000	37.861
ZAB1	-1488636.853	-5003946.541	3654557.708	35.1735753694444	-106.5673498805560	1620.129
ZAB2	-1488631.518	-5003948.225	3654557.679	35.1735746750000	-106.5672884888890	1620.188
ZAB3	-1488632.296	-5003950.805	3654553.828	35.1735323194444	-106.5672886000000	1620.172
ZAN1	-2659536.661	-1549114.770	5567750.753	61.2292016805556	-149.7802510388890	80.697
ZAN2	-2659548.415	-1549110.818	5567746.269	61.2291180666667	-149.7804247416670	80.698
ZAN3	-2659541.366	-1549106.690	5567750.740	61.2292016333333	-149.7804250972220	80.685
ZAU1	138704.101	-4761244.136	4227763.933	41.7826580972222	-88.3313368638889	195.884
ZAU2	138704.362	-4761248.763	4227758.775	41.7825956805556	-88.3313353472222	195.902
ZAU3	138711.065	-4761248.489	4227758.845	41.7825966222222	-88.3312546583333	195.890
ZBW1	1490299.200	-4448983.171	4306010.498	42.7357205500000	-71.4804260944444	39.111
ZBW2	1490304.315	-4448981.154	4306010.847	42.7357246166667	-71.4803590444444	39.137
ZBW3	1490306.023	-4448984.790	4306006.536	42.7356717388889	-71.4803533722222	39.142
ZDC1	1069125.751	-4839598.991	4001126.514	39.1015959388889	-77.5427466750000	80.069
ZDC2	1069128.144	-4839603.632	4001120.315	39.1015239305556	-77.5427312361111	80.077
ZDC3	1069124.046	-4839602.708	4001122.498	39.1015493361111	-77.5427751916667	80.067
ZDV1	-1273628.629	-4711375.575	4094890.113	40.1873032555556	-105.1272245472220	1541.361
ZDV2	-1273622.925	-4711377.081	4094890.123	40.1873035250000	-105.1271552888890	1541.341
ZDV3	-1273624.939	-4711380.280	4094885.837	40.1872530500000	-105.1271683138890	1541.336
ZFW1	-659983.206	-5324060.773	3438276.472	32.8306497444445	-97.0664718694444	155.617
ZFW2	-659988.474	-5324063.320	3438271.471	32.8305963305556	-97.0665243583333	155.574
ZFW3	-659983.497	-5324063.840	3438271.674	32.8305983388889	-97.0664709250000	155.603
ZHU1	-513864.480	-5506451.699	3166720.475	29.9618963944444	-95.3314263694444	10.846
ZHU2	-513867.126	-5506455.104	3166714.317	29.9618318833333	-95.3314503861111	10.920
ZHU3	-513873.400	-5506457.755	3166708.719	29.9617736138889	-95.3315125527778	10.916
ZJX1	772646.436	-5434462.197	3237231.750	30.6988596805556	-81.9081852027778	2.146
ZJX2	772649.753	-5434463.724	3237228.336	30.6988240888889	-81.9081531694444	2.104
ZJX3	772645.695	-5434466.158	3237225.231	30.6987915388889	-81.9081986805556	2.100

WRE	X(m)	Y(m)	Z(m)	Latitude	Longitude	H(m)
ZKC1	-415247.524	-4954556.393	3982161.122	38.8801594250000	-94.7908339111111	305.905
ZKC2	-415231.133	-4954557.706	3982161.172	38.8801601194444	-94.7906444194444	305.889
ZKC3	-415237.252	-4954561.060	3982155.978	38.8801019111111	-94.7907114583333	305.629
ZLA1	-2474409.947	-4637294.618	3602183.537	34.6035184416667	-118.0838956416670	763.495
ZLA2	-2474404.676	-4637297.422	3602183.542	34.6035185166667	-118.0838305611110	763.492
ZLA3	-2474411.288	-4637297.103	3602179.566	34.6034745277778	-118.0838957861110	763.564
ZLC1	-1808273.220	-4486410.821	4145303.021	40.7860433000000	-111.9521776277780	1287.434
ZLC2	-1808274.630	-4486414.436	4145298.529	40.7859898611111	-111.9521771111110	1287.437
ZLC3	-1808270.416	-4486416.128	4145298.518	40.7859898194444	-111.9521233222220	1287.426
ZMA1	966042.293	-5662999.818	2761581.505	25.8246122694444	-80.3191898583333	-7.591
ZMA2	966029.324	-5662999.115	2761585.986	25.8246599777778	-80.3193161833333	-8.225
ZMA3	966037.394	-5662997.960	2761586.341	25.8246620027778	-80.3192349055555	-7.874
ZME1	4070.888	-5226189.292	3644028.426	35.0673941611111	-89.9553700333333	68.601
ZME2	4070.915	-5226186.746	3644032.535	35.0674376583333	-89.9553697166667	68.878
ZME3	4064.724	-5226186.627	3644032.708	35.0674395777778	-89.9554375888889	68.876
ZMP1	-249978.398	-4539297.512	4458955.064	44.6374632611111	-93.1520856833333	262.672
ZMP2	-249972.594	-4539297.849	4458955.056	44.6374631000000	-93.1520124111111	262.679
ZMP3	-249973.692	-4539302.128	4458950.579	44.6374070361111	-93.1520232638889	262.616
ZNY1	1406144.618	-4627343.988	4144322.067	40.7843286555556	-73.0971658944444	6.455
ZNY2	1406146.422	-4627347.030	4144317.290	40.7842758805556	-73.0971559250000	5.936
ZNY3	1406140.857	-4627348.682	4144317.323	40.7842763250000	-73.0972246944444	5.929
ZOA1	-2684436.886	-4293337.385	3865351.869	37.5430539750000	-122.0159480472220	-3.505
ZOA2	-2684433.886	-4293341.470	3865349.451	37.5430264166667	-122.0158947583330	-3.494
ZOA3	-2684438.256	-4293342.347	3865345.591	37.5429820361111	-122.0159314250000	-3.419
ZOB1	650770.169	-4754715.668	4187420.756	41.2971545250000	-82.2064449000000	223.681
ZOB2	650777.842	-4754714.851	4187422.778	41.2971668305556	-82.2063528138889	225.189
ZOB3	650776.175	-4754719.664	4187414.979	41.2970870805556	-82.2063803250000	223.454
ZSE1	-2308930.278	-3668169.677	4663526.477	47.2869932277778	-122.1883729055560	82.102
ZSE2	-2308934.671	-3668175.223	4663520.070	47.2869076500000	-122.1883829972220	82.166
ZSE3	-2308935.728	-3668179.498	4663516.127	47.2868559611111	-122.1883647194440	82.105
ZSU1	2462589.442	-5529372.106	2003724.473	18.4313357916667	-65.9934766777778	-28.110
ZSU2	2462587.511	-5529377.479	2003712.188	18.4312187194444	-65.9935140666667	-28.083
ZSU3	2462594.139	-5529375.226	2003710.112	18.4311991000000	-65.9934480805556	-28.133
ZTL1	529840.391	-5305248.806	3489342.852	33.3796886333333	-84.2967261361111	261.132
ZTL2	529846.777	-5305247.955	3489343.135	33.3796918166667	-84.2966569388889	261.110
ZTL3	529847.447	-5305251.397	3489337.898	33.3796350694444	-84.2966534500000	261.144

Figure 10-1 Build W7.010 Antenna Positions Deltas from 6/28/14 OPUS Survey

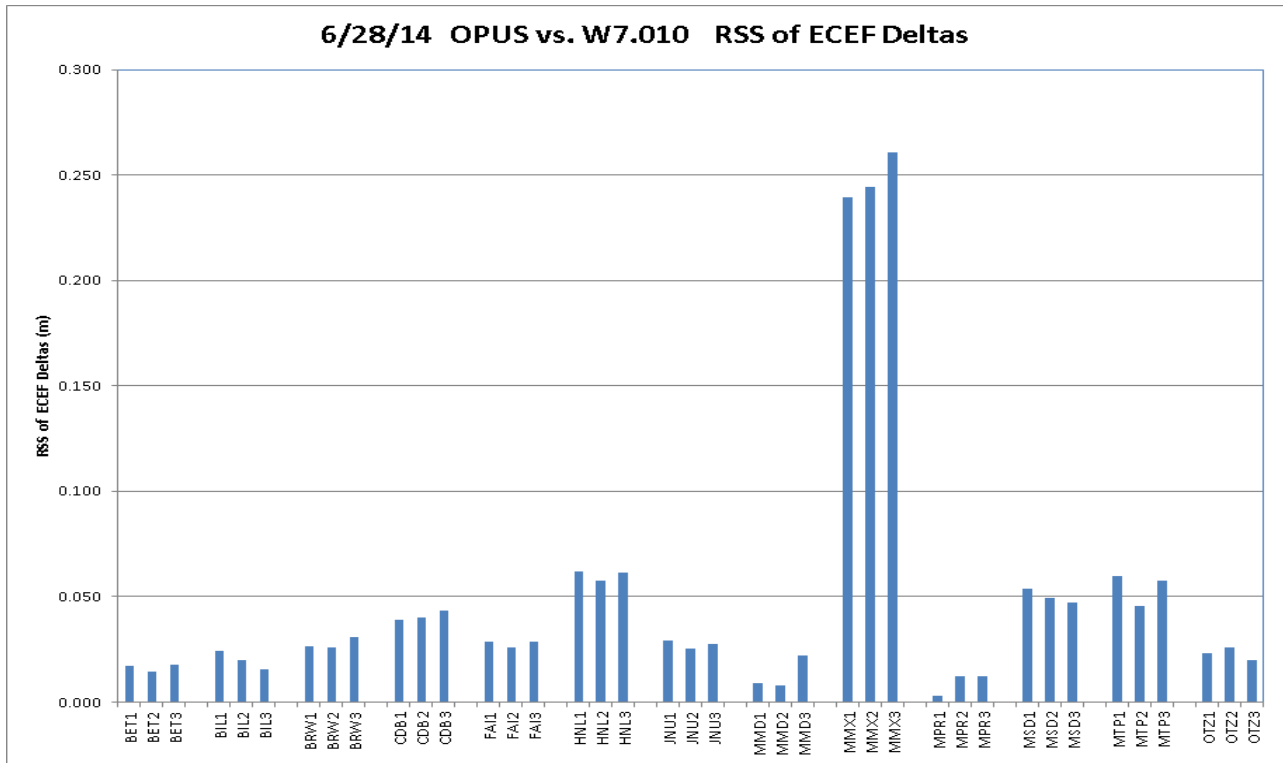


Figure 10-2 Build W7.010 Antenna Positions Deltas from 6/28/14 OPUS Survey

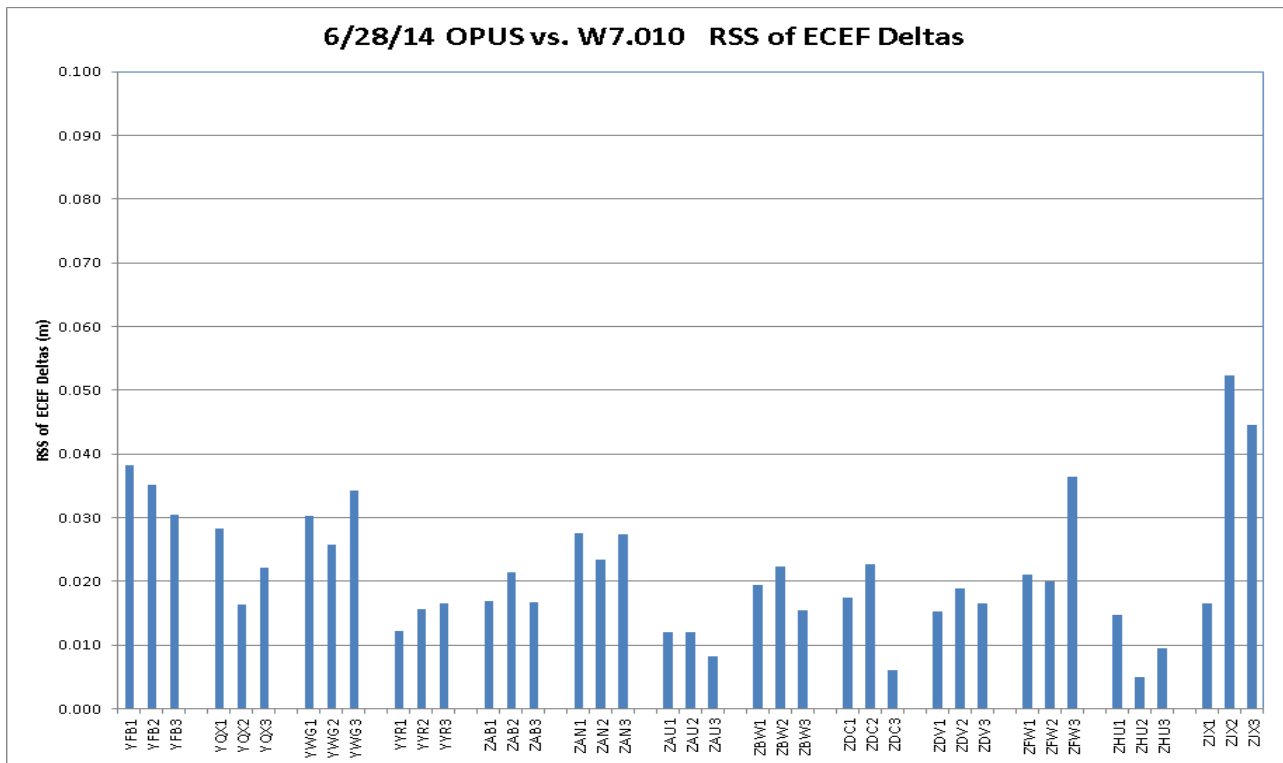


Figure 10-3 Build W7.010 Antenna Positions Deltas from 6/28/14 OPUS Survey

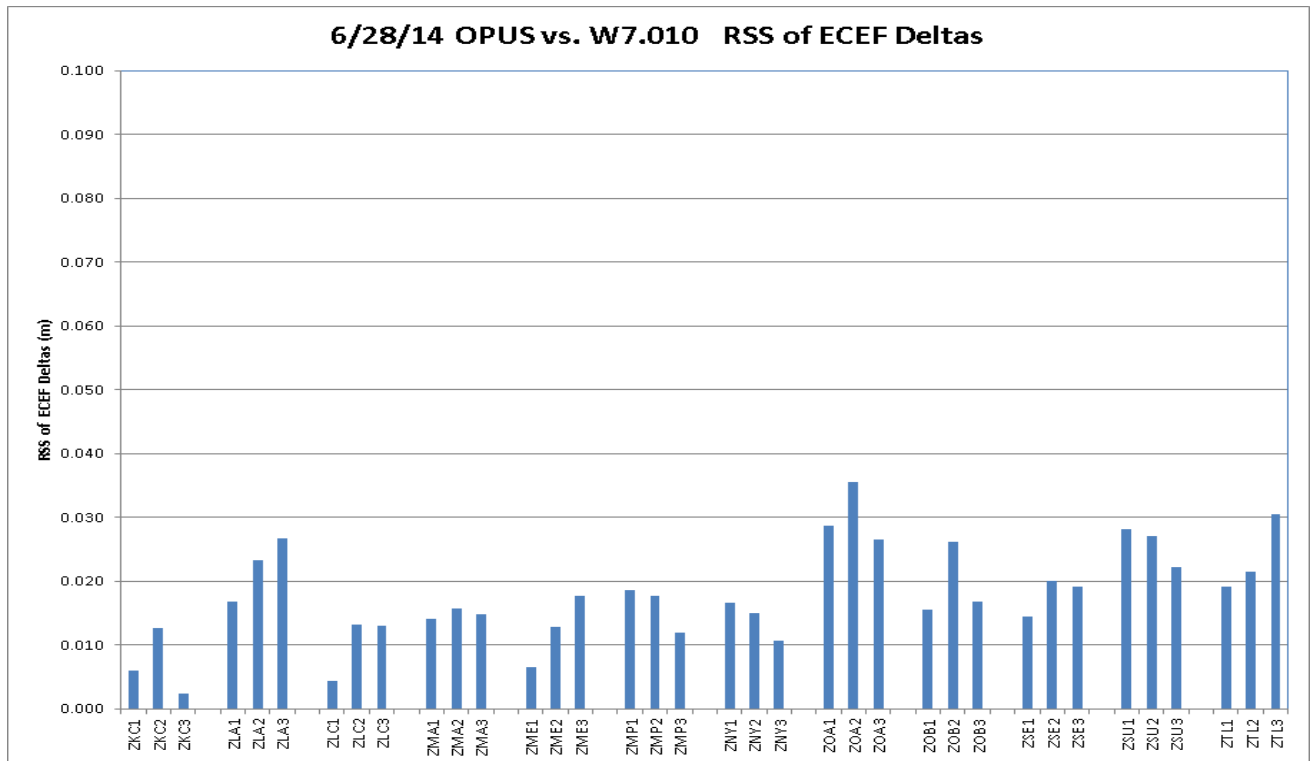


Figure 10-4 6/28/14 OPUS Survey Overall RMS Qualities

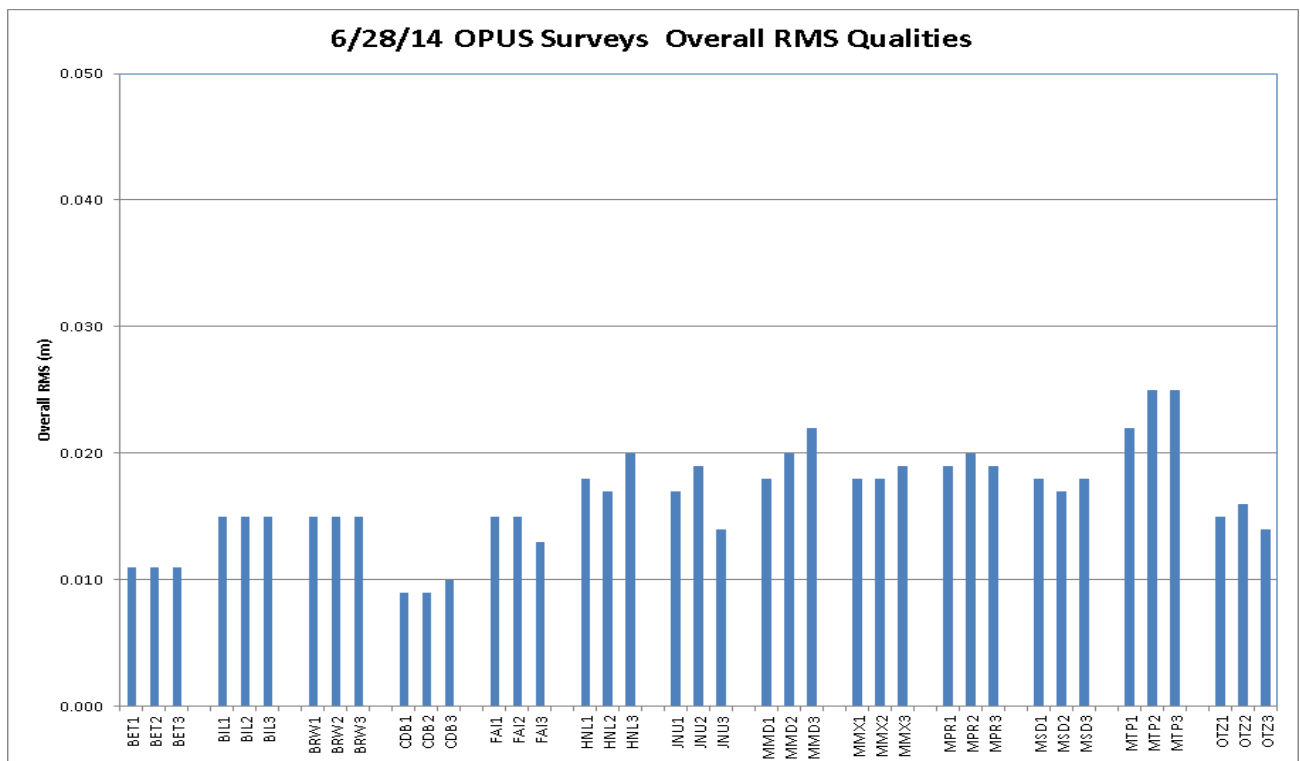


Figure 10-5 6/28/14 OPUS Survey Overall RMS Qualities

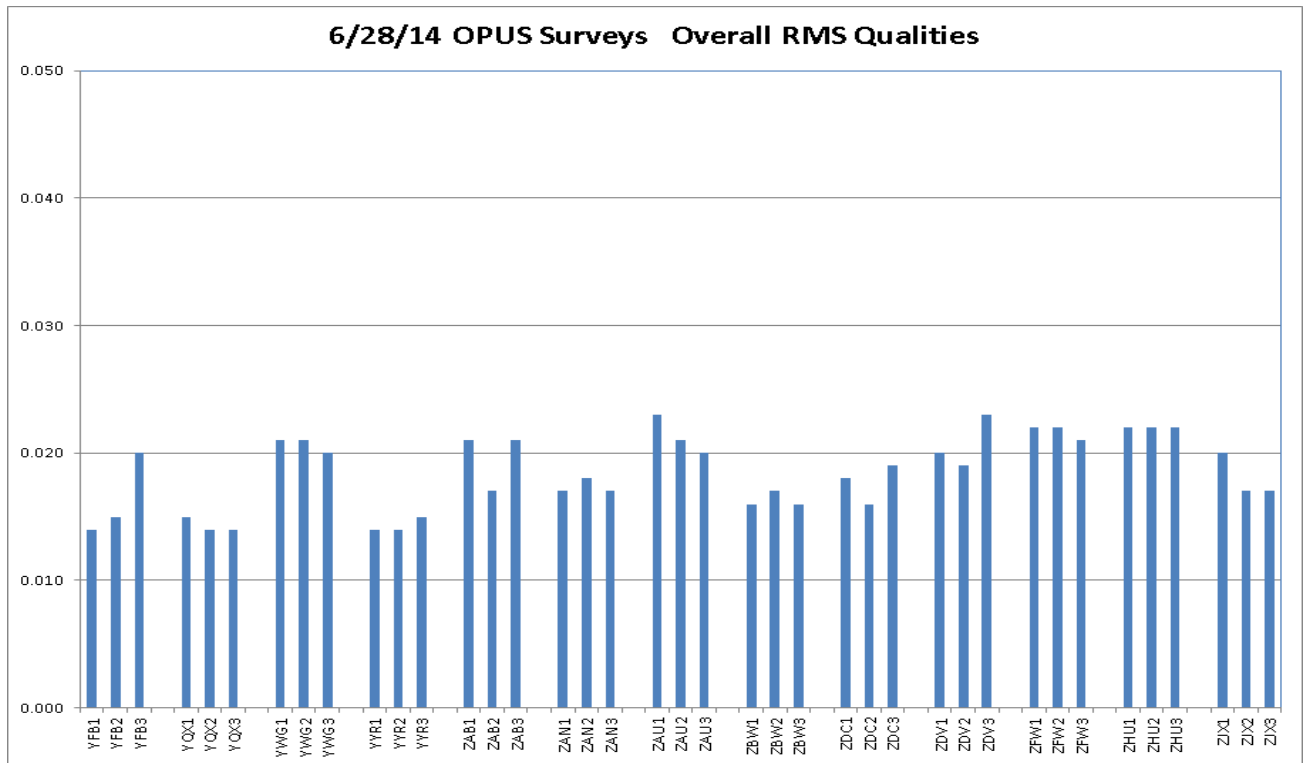


Figure 10-6 6/28/14 OPUS Survey Overall RMS Qualities

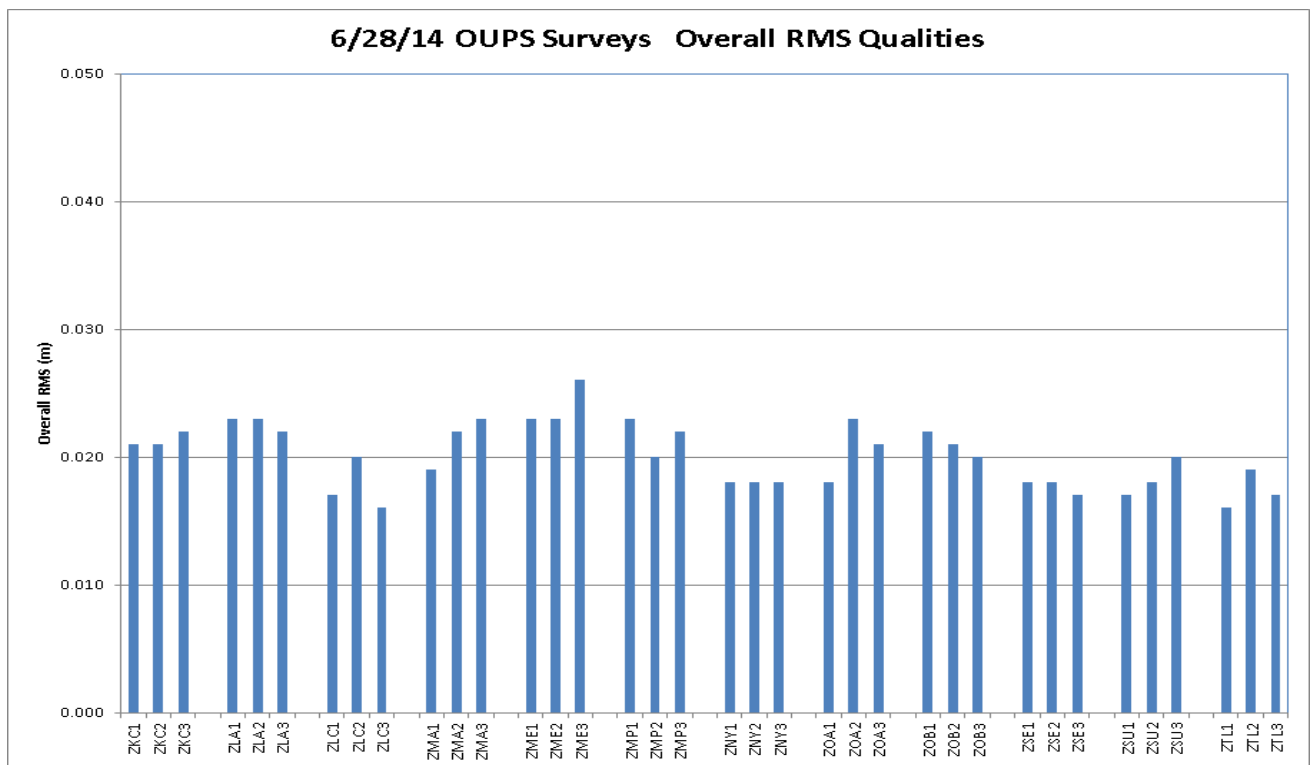


Figure 10-7 6/28/14 OPUS vs. CSRS RSS ECEF Deltas

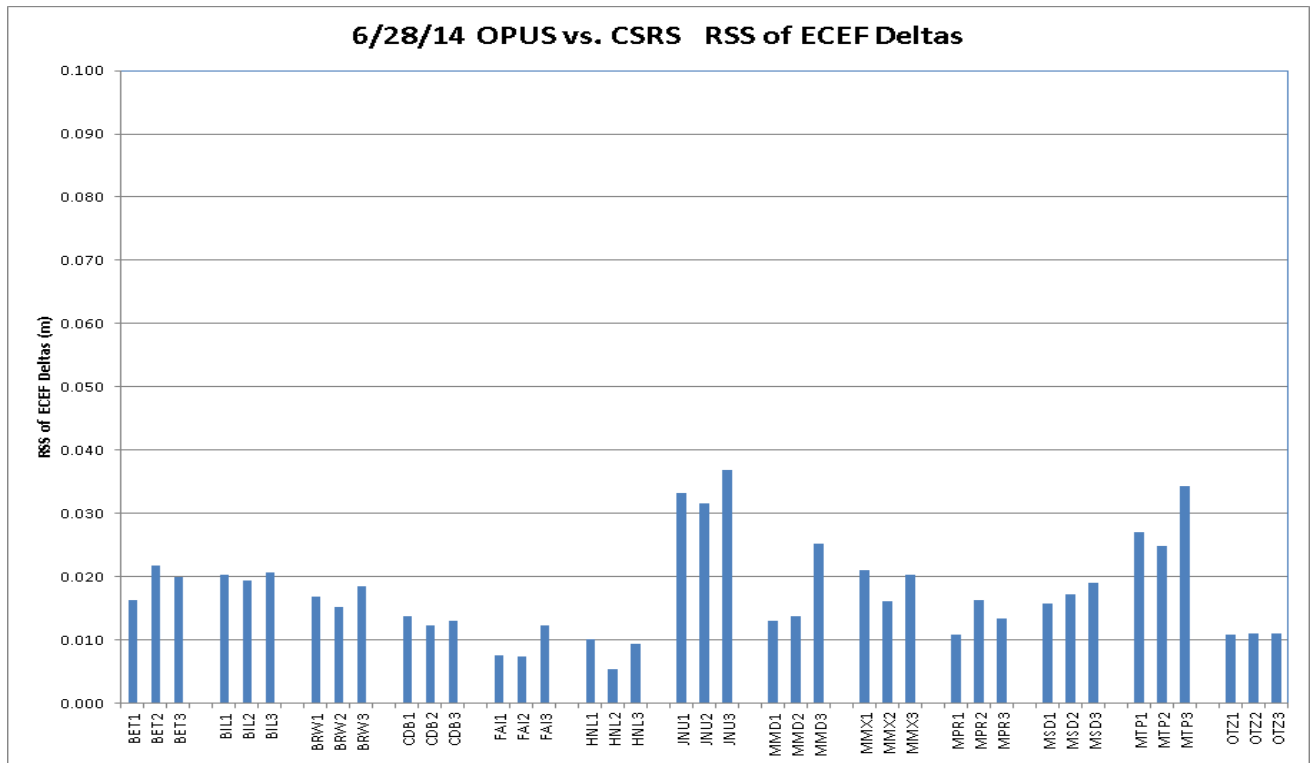


Figure 10-8 6/28/14 OPUS vs. CSRS RSS ECEF Deltas

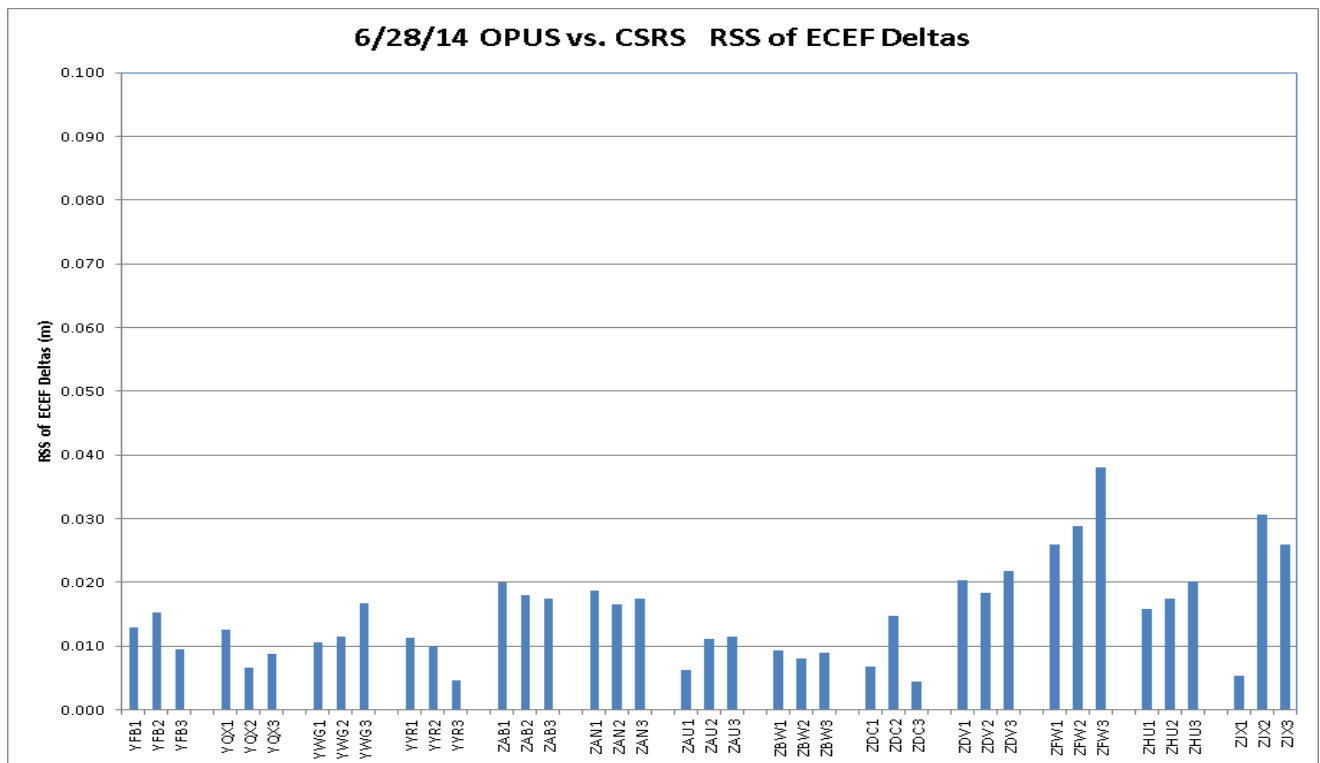


Figure 10-9 6/28/14 OPUS vs. CSRS RSS ECEF Deltas

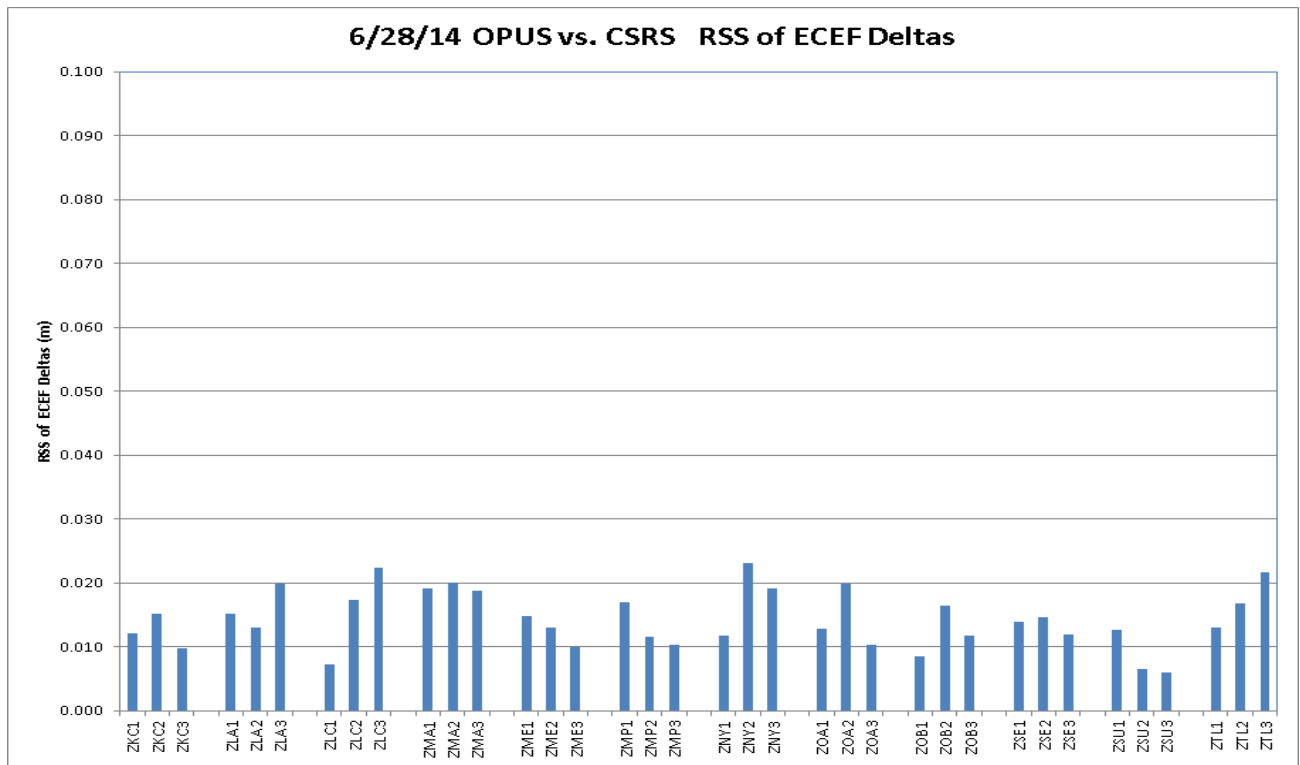


Figure 10-10 6/28/14 CSRS Survey Qualities

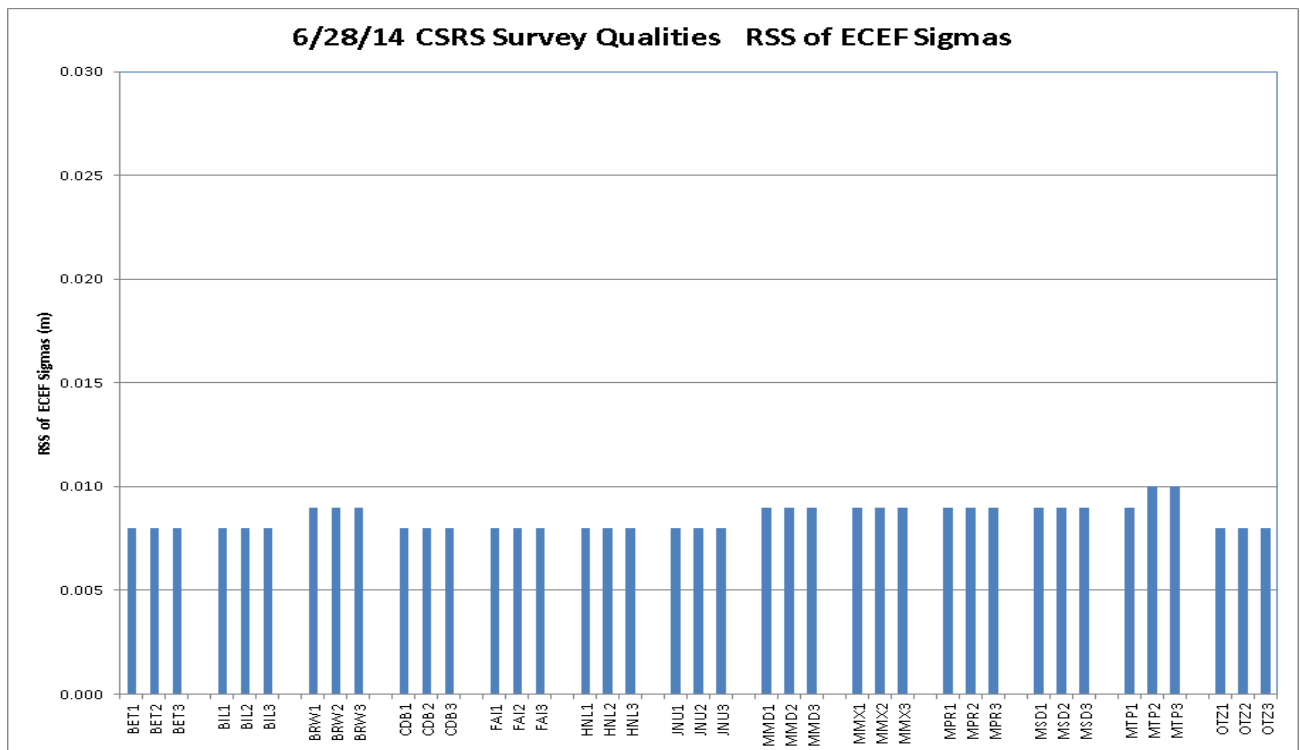


Figure 10-11 6/28/14 CSRS Survey Qualities

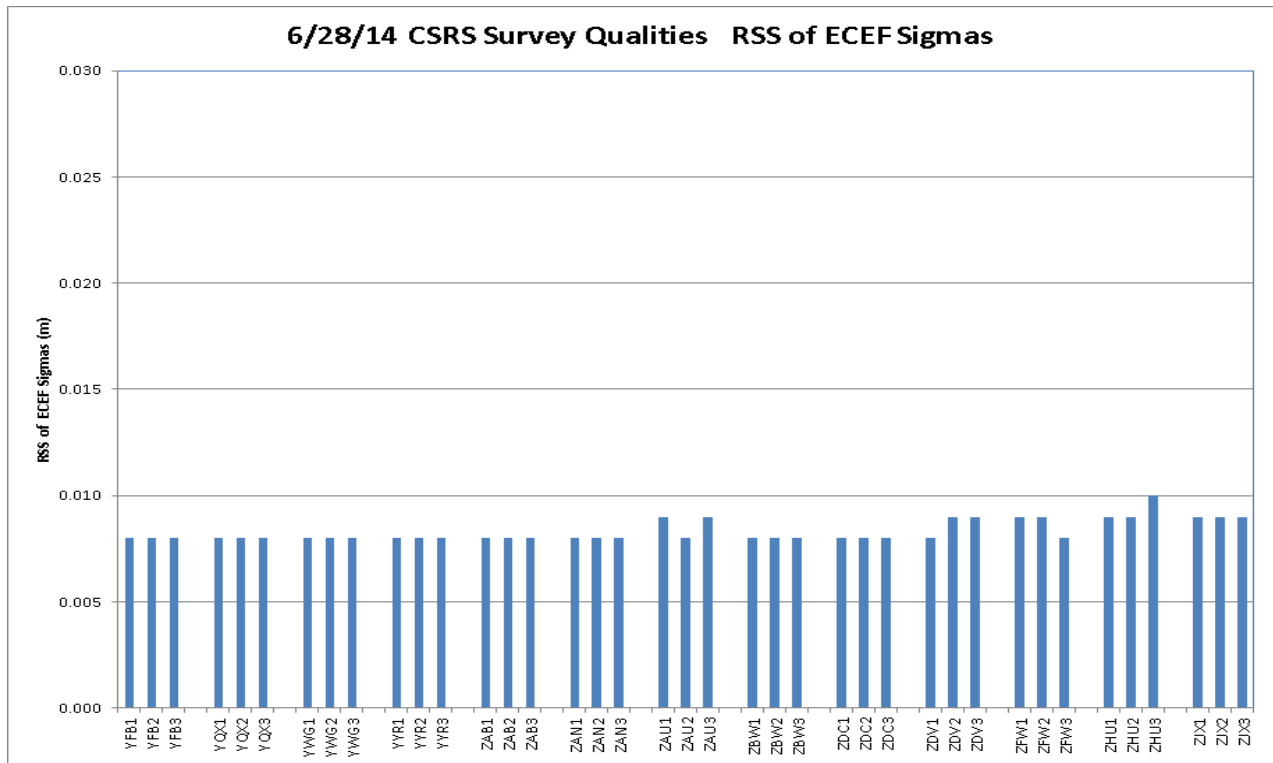


Figure 10-12 6/28/14 CSRS Survey Qualities

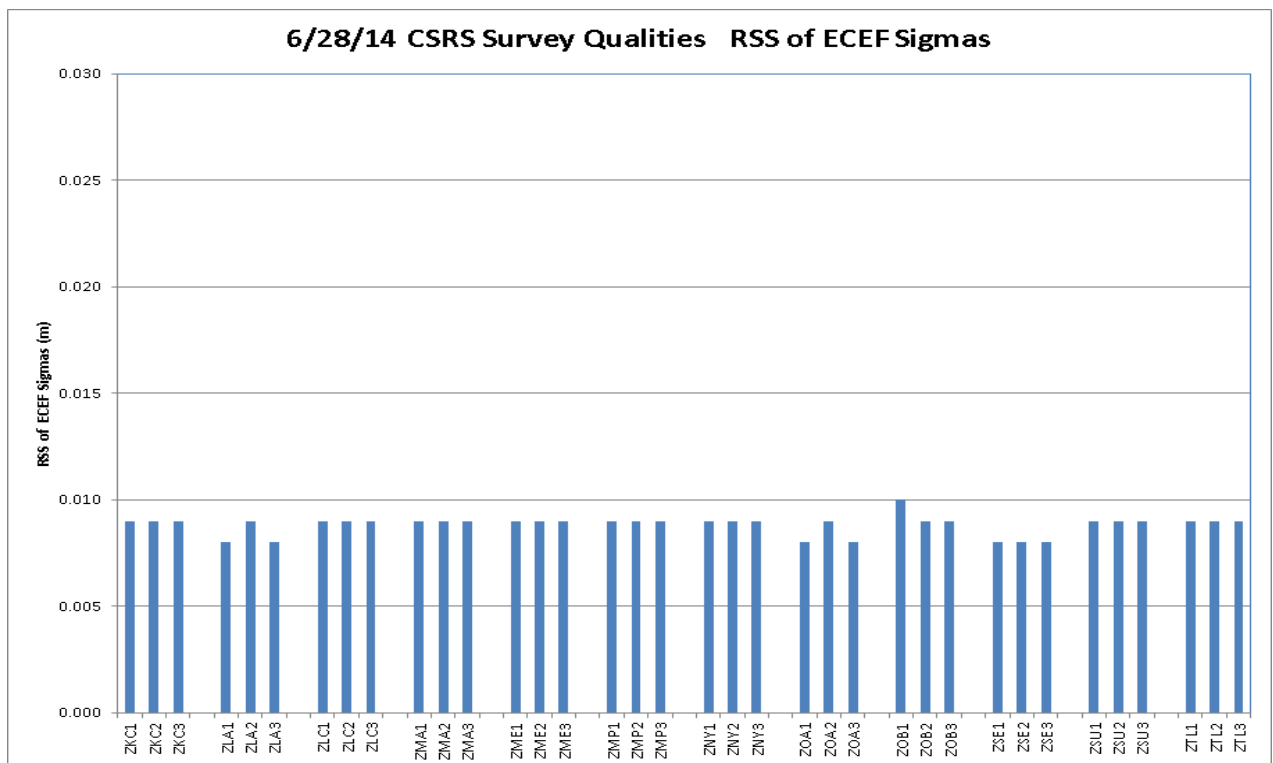


Figure 10-13 6/28/14 OPUS vs. Build W7.012

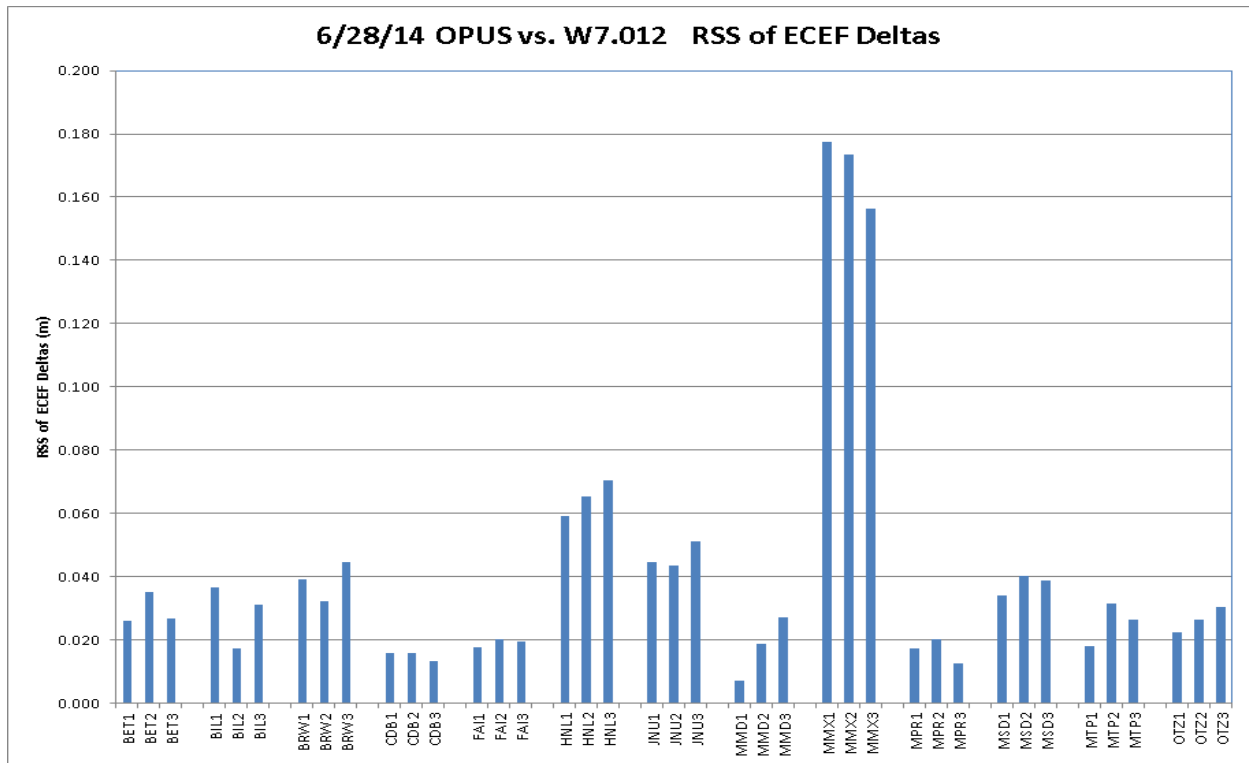


Figure 10-14 6/28/14 OPUS vs. BUILD W7.012

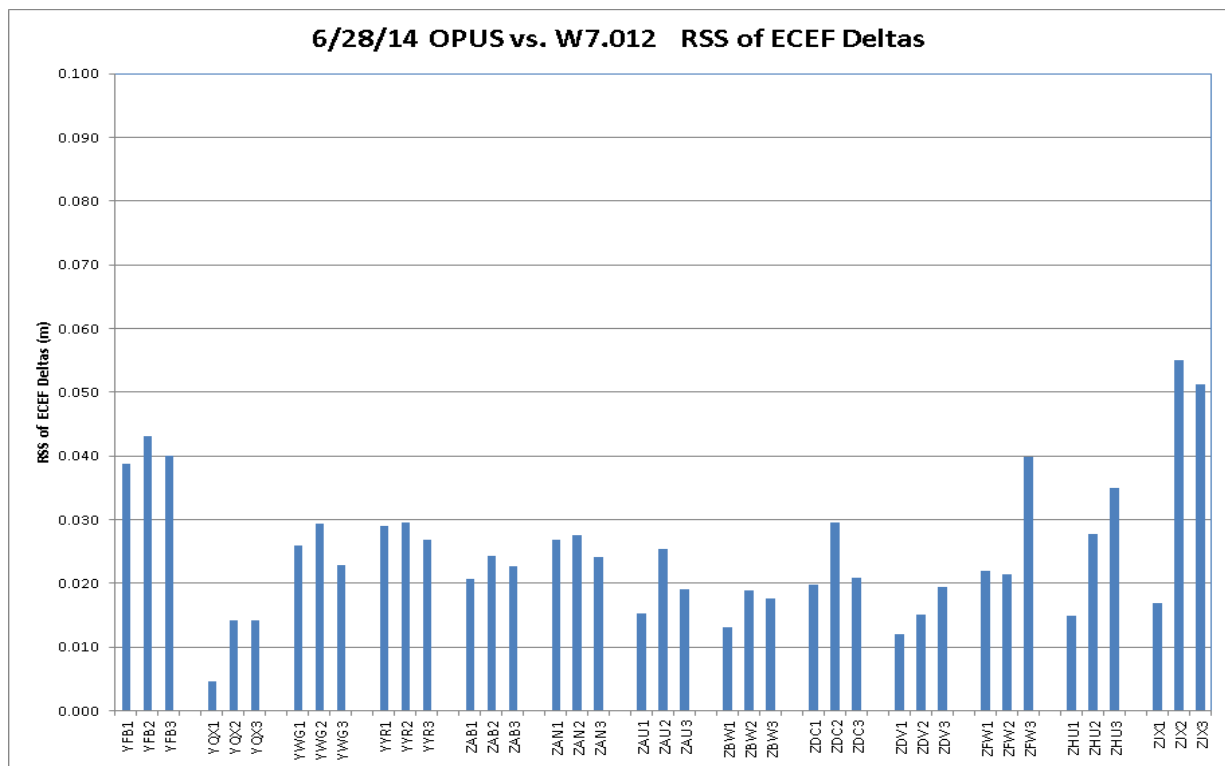
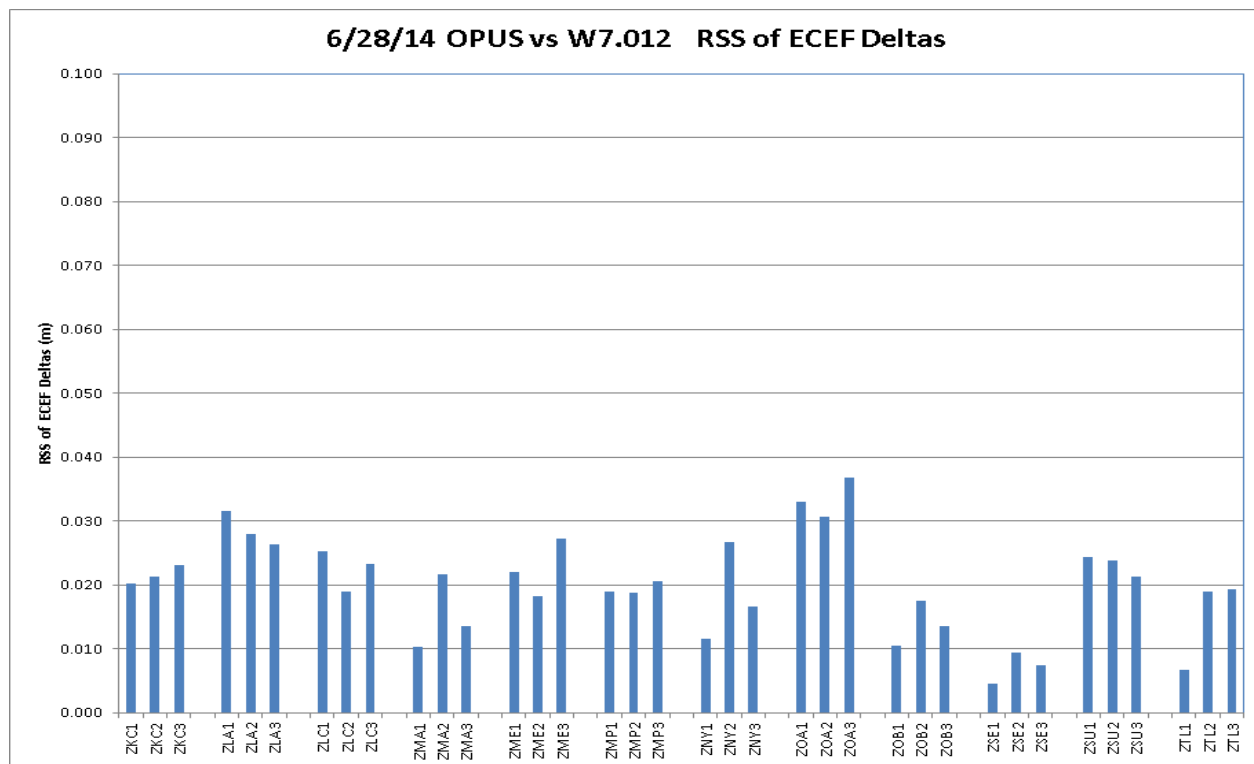


Figure 10-15 6/28/14 OPUS vs. Build W7.012



11.0 SIGNAL QUALITY MONITOR (SQM)

The Signal Quality Monitor (SQM) is designed to detect signal deformations that originate in the GPS or GEO satellites and ensures that the UDRE values are sufficiently inflated to protect given the monitor’s current observations. SQM processes various correlator spacing measurements produced by the reference station receivers to form four detection metrics for each receiver and calculates statistics based on the observed performance against “ideal” signal correlation peaks. This results in an estimate of the overall deformation per satellite. The deformation level calculated is then compared against threshold values, which includes the acceptable error levels per UDRE value. If the estimated deformation exceeds threshold, the monitor trips for the given satellite and the UDRE value is set to ‘Don’t Use’. The monitor depends on the entire ground network in order to ensure that the satellite is the source of any problem detected rather than a localized affect. Currently all 114 receivers are being used in the SQM computations.

WAAS SQM offline monitoring effort includes the monitoring of the PRN type biases, trips, and the estimated deformation for each satellite that will be referred to as PRN bias in this report.

11.1 Alpha Metrics

The alpha metrics values are pre-determined by offline integrity analysis and are defined as constants in the SQM algorithm. These values remained unchanged for this reporting period and are listed in Table 11-1. Currently there are 4 sets of alpha metrics in the WAAS SQM algorithm that form four detection metrics for each receiver channel. For this report, the four detection metrics will be referred to as: DM1, DM2, DM3, and DM4.

Table 11-1 Alpha Metrics

Correlator Spacing	DM1	DM2	DM3	DM4
-0.1	0	0.43407318	0	-0.36110353
-0.075	0	0.48570652	-0.0058771682	-0.74860302
-0.05	-0.4071265	-0.69931105	-0.011382325	0.23726003
-0.025	1	-0.010099034	0.00037033029	-0.0076011735
0	0	0	0	0
0.025	-0.25	0.13317879	0.99991788	-0.062414070
0.05	1.008525	-0.22851782	0	0.25177272
0.075	0	0.10209042	0	0.42875623
0.1	0	0.078436452	0	0.41602138

11.2 Type Bias

PRN Type biases are evaluated as part of the WAAS SQM offline monitoring effort. Depending on the PRN number of any given satellite, it can be classified into three categories of correlation function shapes: skinny (Type 0), nominal (Type 1), and broad (Type 2). Wideband geostationary satellites are considered a different type (Type 3). PRN-type estimates are computed at each epoch and daily averages are computed for each type, for four detection metrics.

For this reporting period, geostationary satellites type biases are not evaluated. Table11-3 shows the rollup average for the quarter. Table 11-4 shows the rollup average since January 1, 2008. Figure 11-1 shows the daily average for the four detection metrics for the quarter.

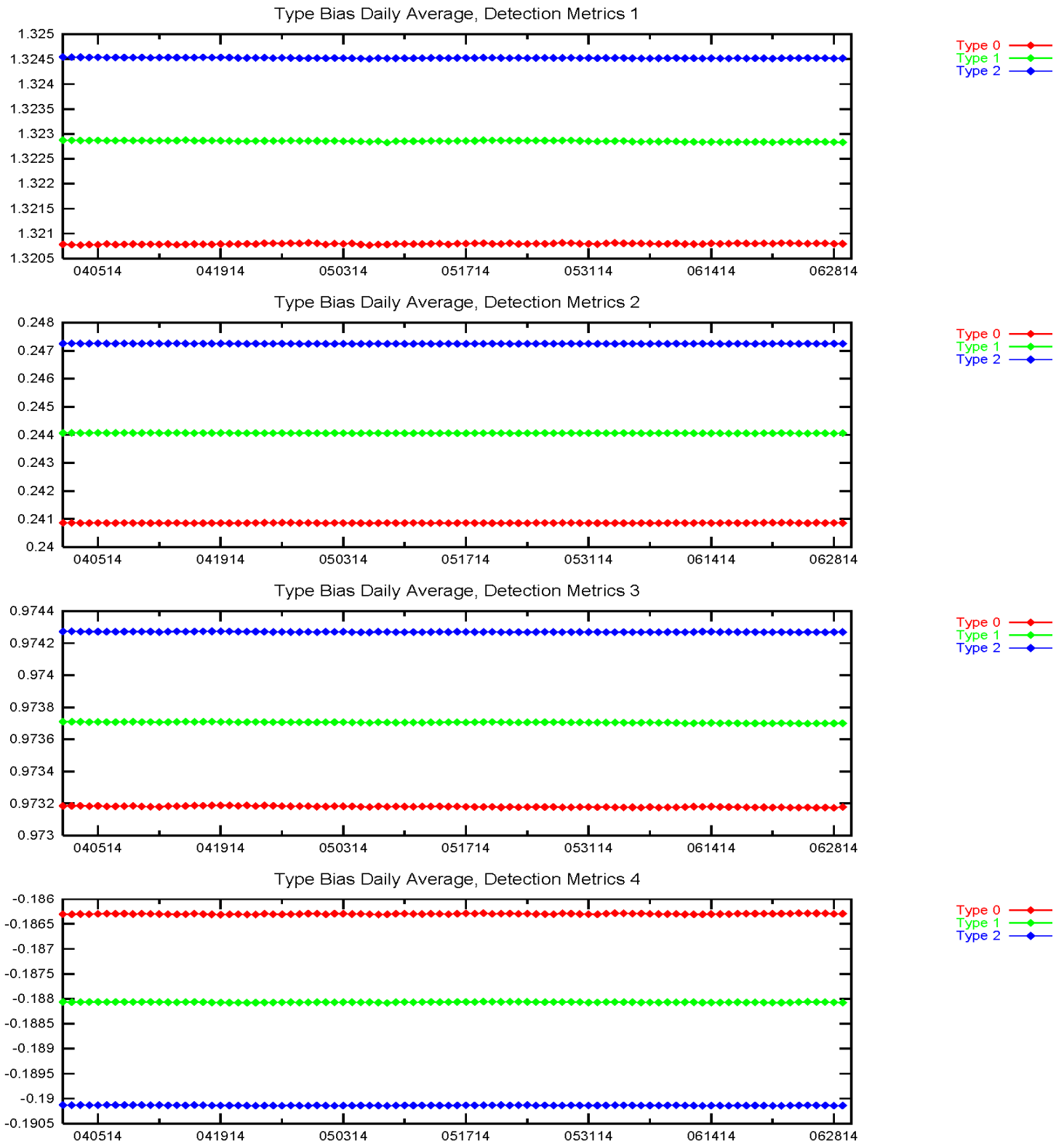
Table 11-2 Type Bias Average for the Quarter

Detection Metric	Type 0	Type 1	Type 2
DM 1	1.3208000	1.3228500	1.3245200
DM 2	0.2408570	0.2440610	0.2472500
DM 3	0.9731800	0.9737050	0.9742700
DM 4	-0.1863000	-0.1880690	-0.1901350

Table 11-3 Type Bias Average Since January 1, 2008

Detection Metric	Type 0	Type 1	Type 2
DM 1	1.3209000	1.3228800	1.3245800
DM 2	0.2408500	0.2440900	0.2472730
DM 3	0.9731740	0.9737090	0.9742750
DM 4	-0.1862190	-0.1880650	-0.1901030

Figure 11-1 Type Bias Average Trend



11.3 PRN Bias

PRN biases are evaluated as part of the WAAS SQM offline monitoring effort. PRN bias is the overall estimated deformation per satellite across receivers. Detection metrics are adjusted for inter-receiver bias, corrected for PRN type bias, and combined across receivers for each satellite. Relying on the assertion that the majority of the SV signals are healthy and normal, detection metrics are normalized over all the satellites on orbit resulting in an overall PRN bias for each satellite. PRN biases are collected at each epoch and daily averages are computed for each satellite, for four detection metrics.

Table 11-4 and Figure 11-2 show the rollup PRN bias average for the quarter. Figures 11-3 to 11-10 show the PRN bias average trend for each SV. The maximum average for DM1 for this quarter is PRN 23 at 0.0010628. The maximum average for DM2 is PRN 11 at 0.0002075. The maximum average for DM3 is PRN 10 at 0.0002550 and the maximum average for DM4 is PRN 23 at 0.0004477.

For this reporting period, geostationary satellite biases are not evaluated. Please refer to Table 1-5 for events that may have an impact on PRN bias statistics. The small spikes in PRN bias daily average are due to satellite outages. On the days of satellite maintenance, partial data resulted in a slightly varied PRN bias daily average compared to full day data average. PRN-6 (SVN-67) became operational on 6/10/14. PRN-30 (SVN-64) became operational on 5/30/14. PRN-9 (SVN-39) was decommissioned on 5/19/14.

Table 11-4 PRN Bias Average for the Quarter

PRN	SVN	DM1	DM2	DM3	DM4
1	63	0.0001532	0.0000941	0.0000828	0.0000894
2	61	0.0005641	0.0001250	0.0000934	0.0001124
3	33	0.0001707	0.0000738	0.0001054	0.0003470
4	34	0.0001730	0.0000448	0.0000627	0.0001369
5	50	0.0001204	0.0001215	0.0000578	0.0001040
6	67	0.0002090	0.0002023	0.0001487	0.0001301
7	34	0.0001251	0.0000747	0.0000336	0.0001297
8	38	0.0001498	0.0001534	0.0000375	0.0000948
9	39	0.0001533	0.0000478	0.0000570	0.0001017
10	40	0.0006462	0.0000487	0.0002550	0.0001042
11	46	0.0009515	0.0002075	0.0000569	0.0002439
12	58	0.0001488	0.0000736	0.0000958	0.0000777
13	43	0.0005868	0.0000511	0.0000828	0.0001627
14	41	0.0006970	0.0001303	0.0001185	0.0001251
15	55	0.0001402	0.0000555	0.0000268	0.0001446
16	56	0.0001308	0.0000665	0.0001251	0.0003376
17	53	0.0001559	0.0000691	0.0000378	0.0001204
18	54	0.0006951	0.0001275	0.0000476	0.0002387
19	59	0.0004572	0.0001649	0.0000473	0.0000892
20	51	0.0001385	0.0000559	0.0000357	0.0001700
21	45	0.0003789	0.0001219	0.0001693	0.0001231
22	47	0.0003620	0.0000542	0.0000932	0.0003309
23	60	0.0010628	0.0001737	0.0000395	0.0004477
24	65	0.0002161	0.0000508	0.0000404	0.0001110
25	62	0.0003137	0.0001872	0.0000815	0.0001276
26	26	0.0002217	0.0000647	0.0001354	0.0000948
27	66	0.0006012	0.0001841	0.0000712	0.0003054
28	44	0.0002894	0.0000455	0.0000293	0.0000876
29	57	0.0002852	0.0000576	0.0000946	0.0002853
30	64	0.0002092	0.0000565	0.0000498	0.0001580
31	52	0.0003817	0.0001477	0.0000373	0.0002445
32	23	0.0001978	0.0000579	0.0000972	0.0001029

Figure 11-2 PRN Bias Average for the Quarter

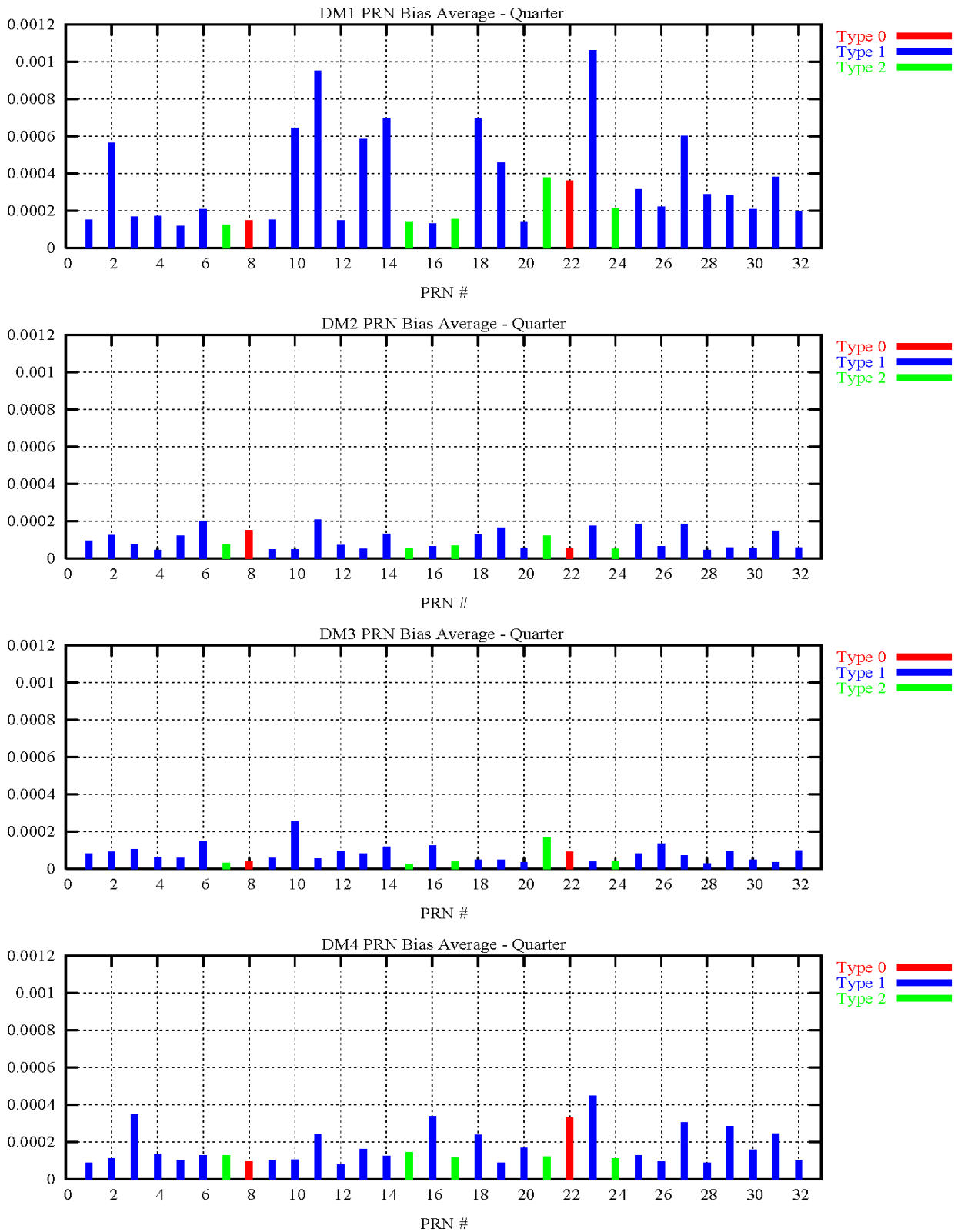


Figure 11-3 PRN Bias Average Trend (PRN 1 – PRN 4)

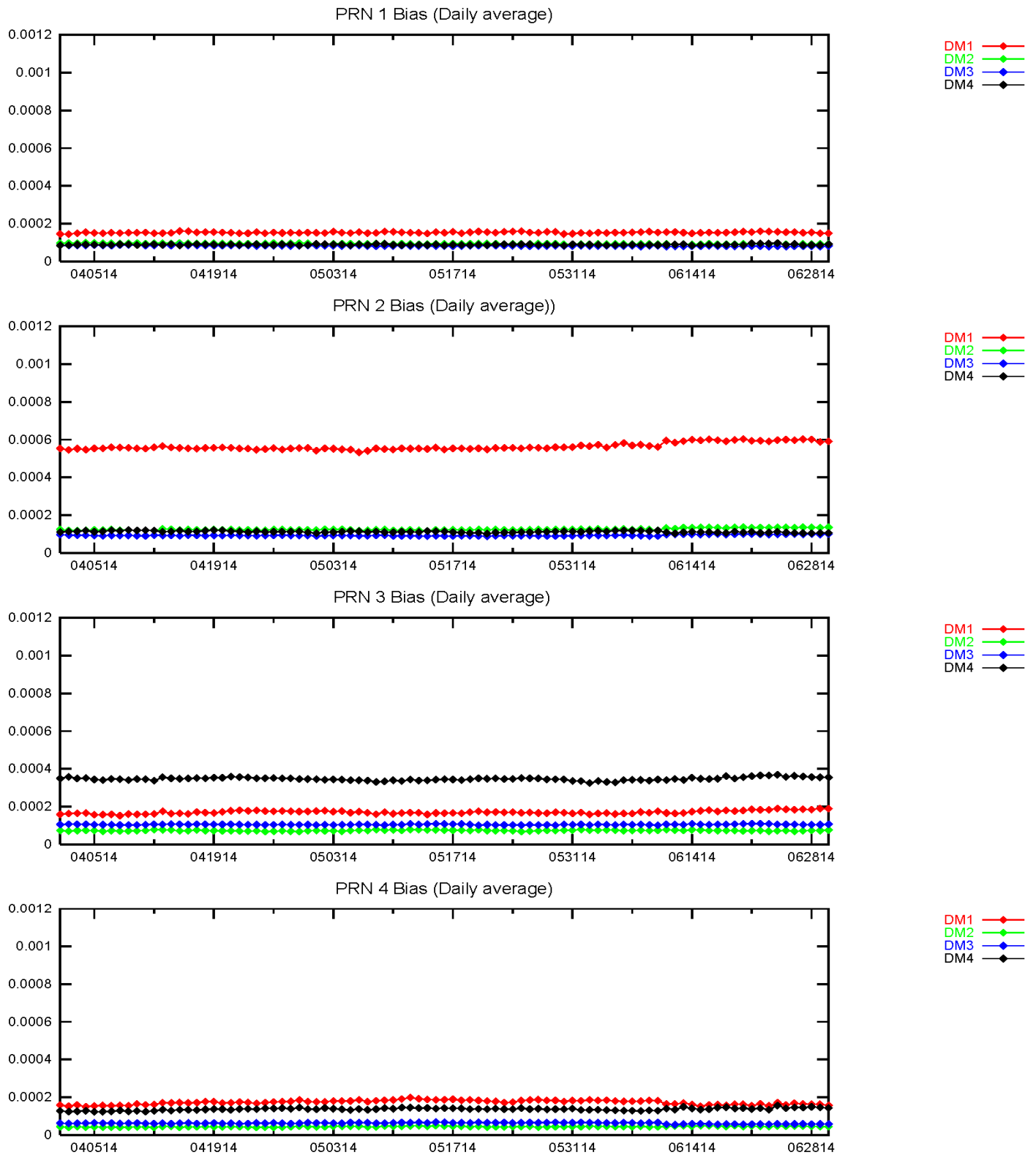


Figure 11-4 PRN Bias Average Trend (PRN 5 – PRN 8)

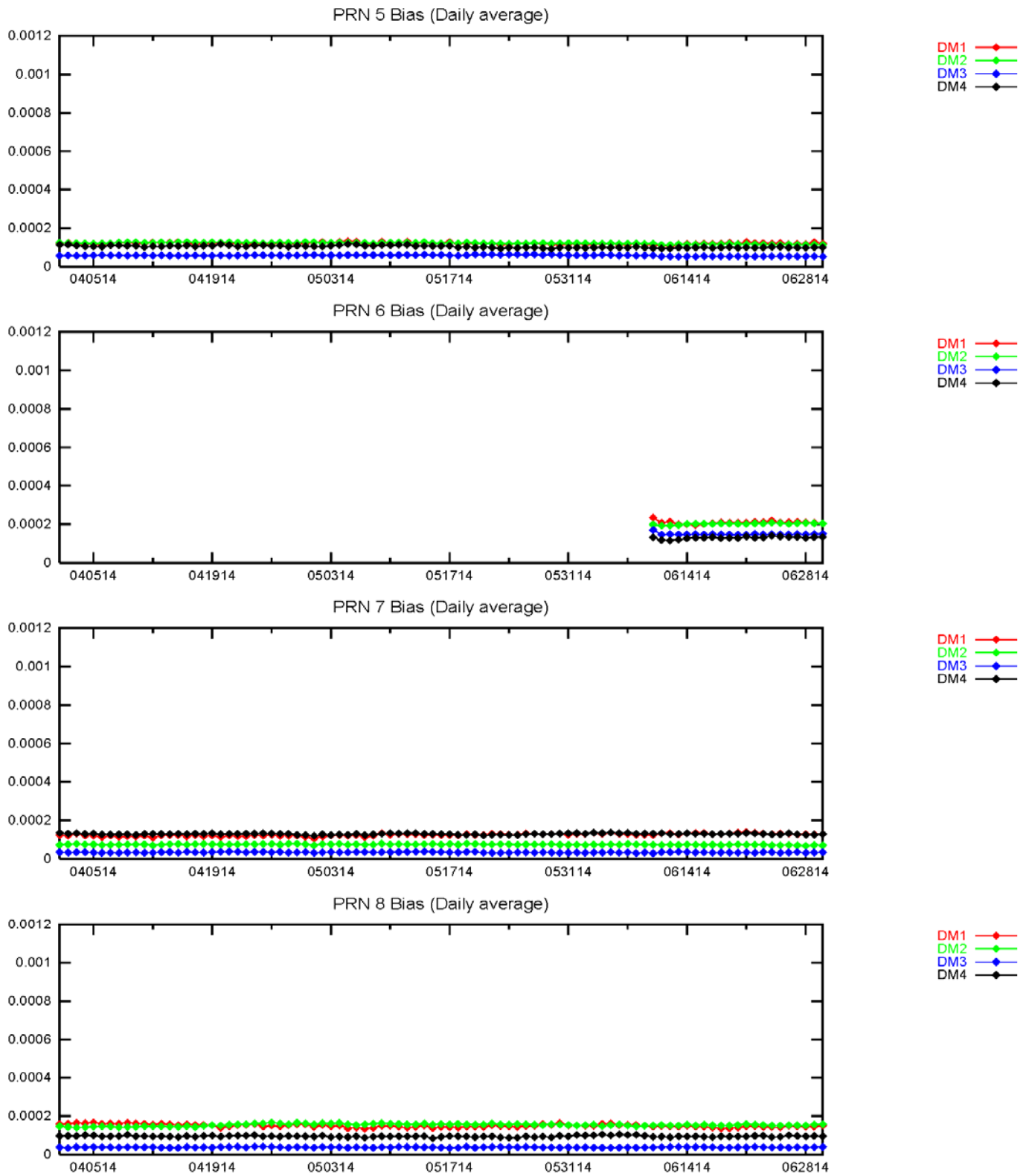


Figure 11-5 PRN Bias Average Trend (PRN 9 – PRN 12)

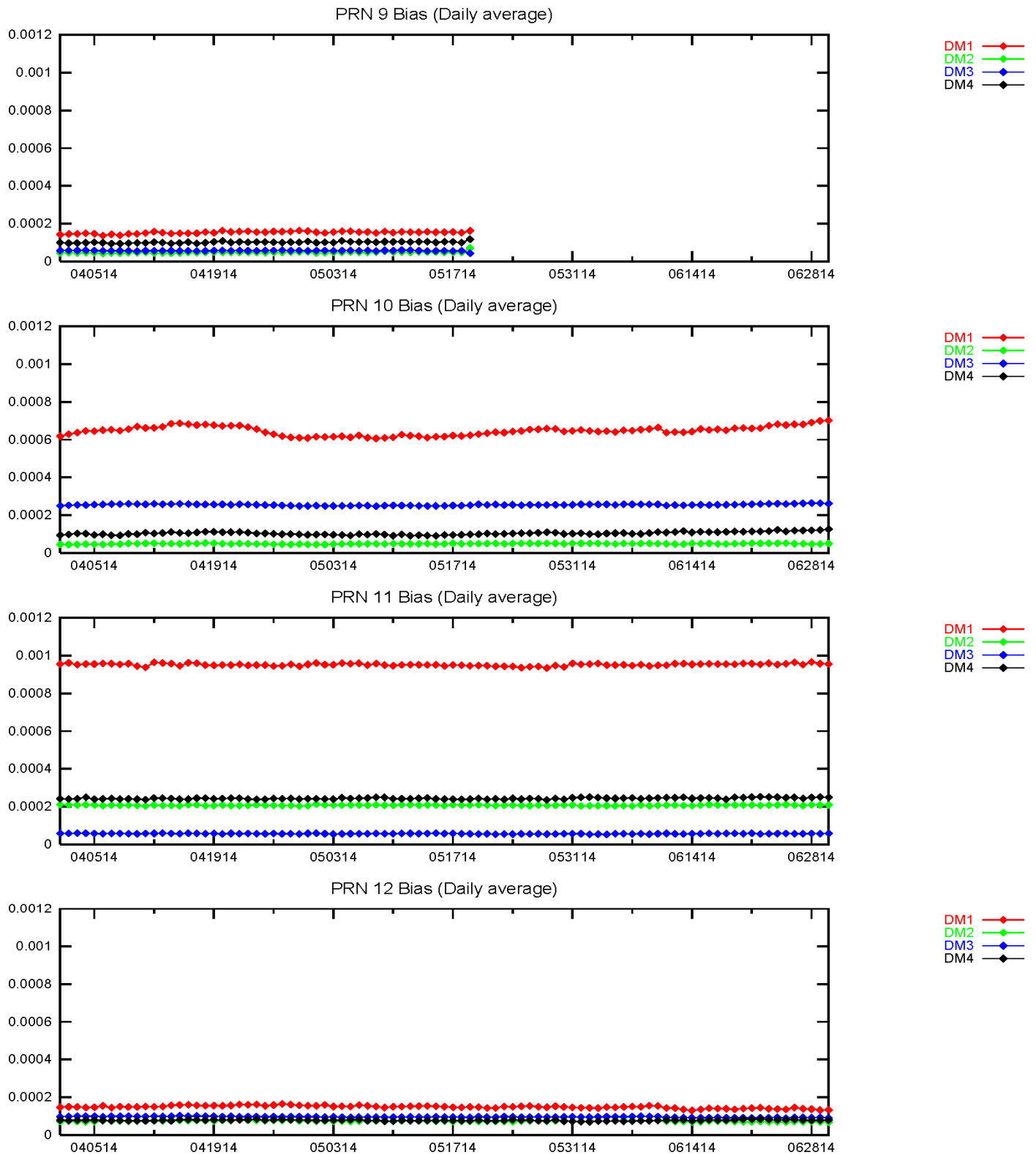


Figure 11-6 PRN Bias Average Trend (PRN 13 – PRN 16)

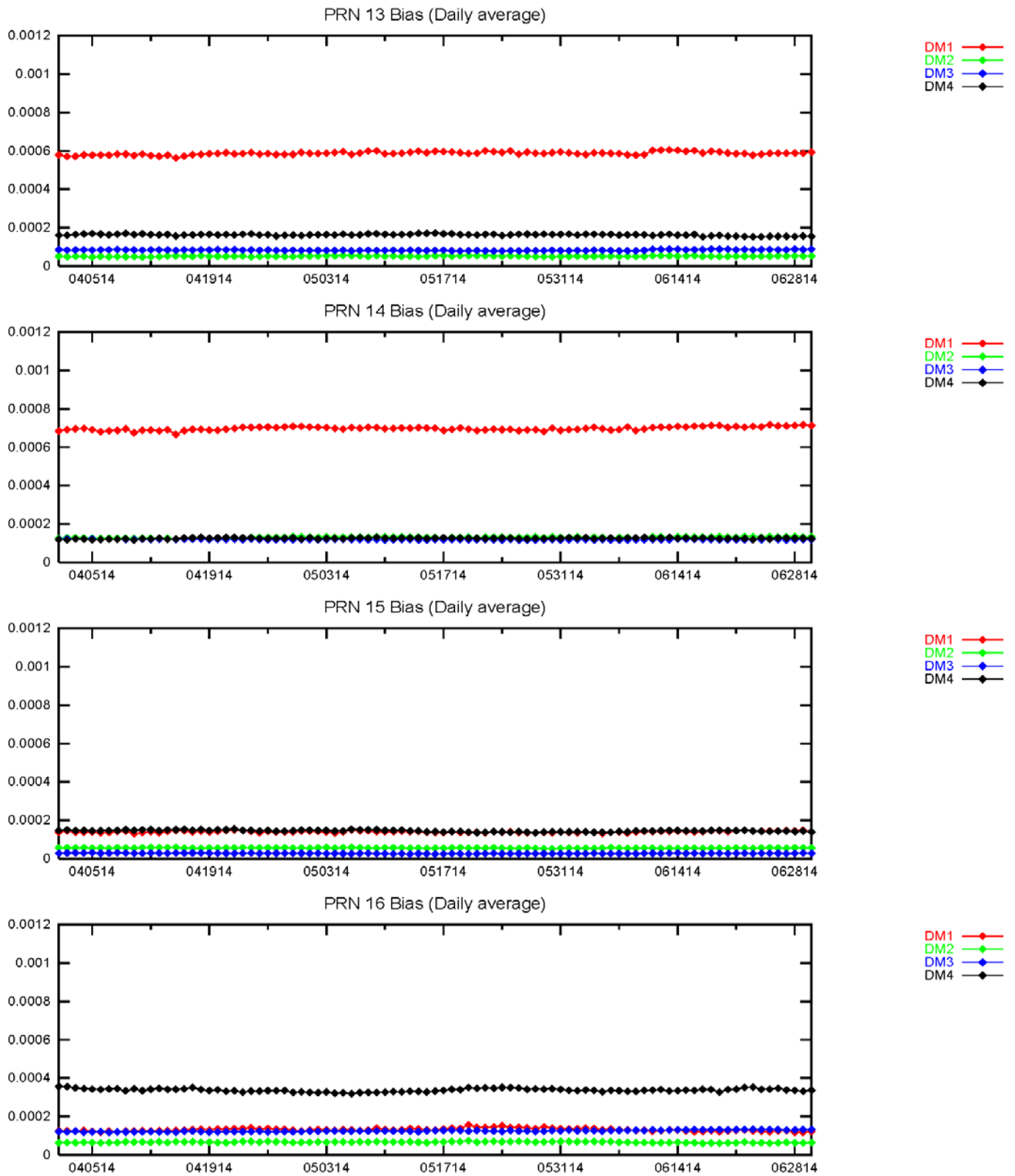


Figure 11-7 PRN Bias Average Trend (PRN 17 – PRN 20)

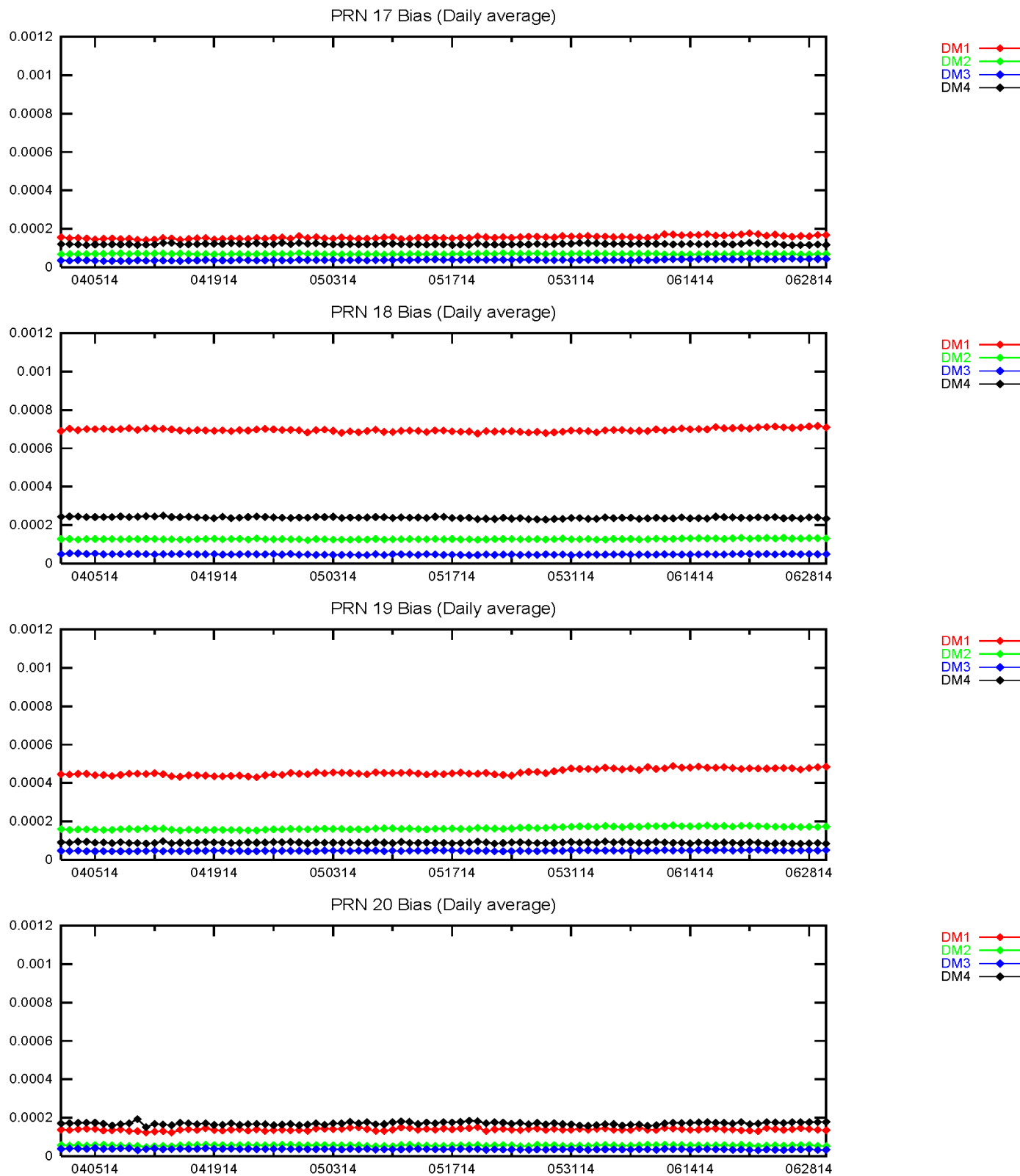


Figure 11-8 PRN Bias Average Trend (PRN 21 – PRN 24)

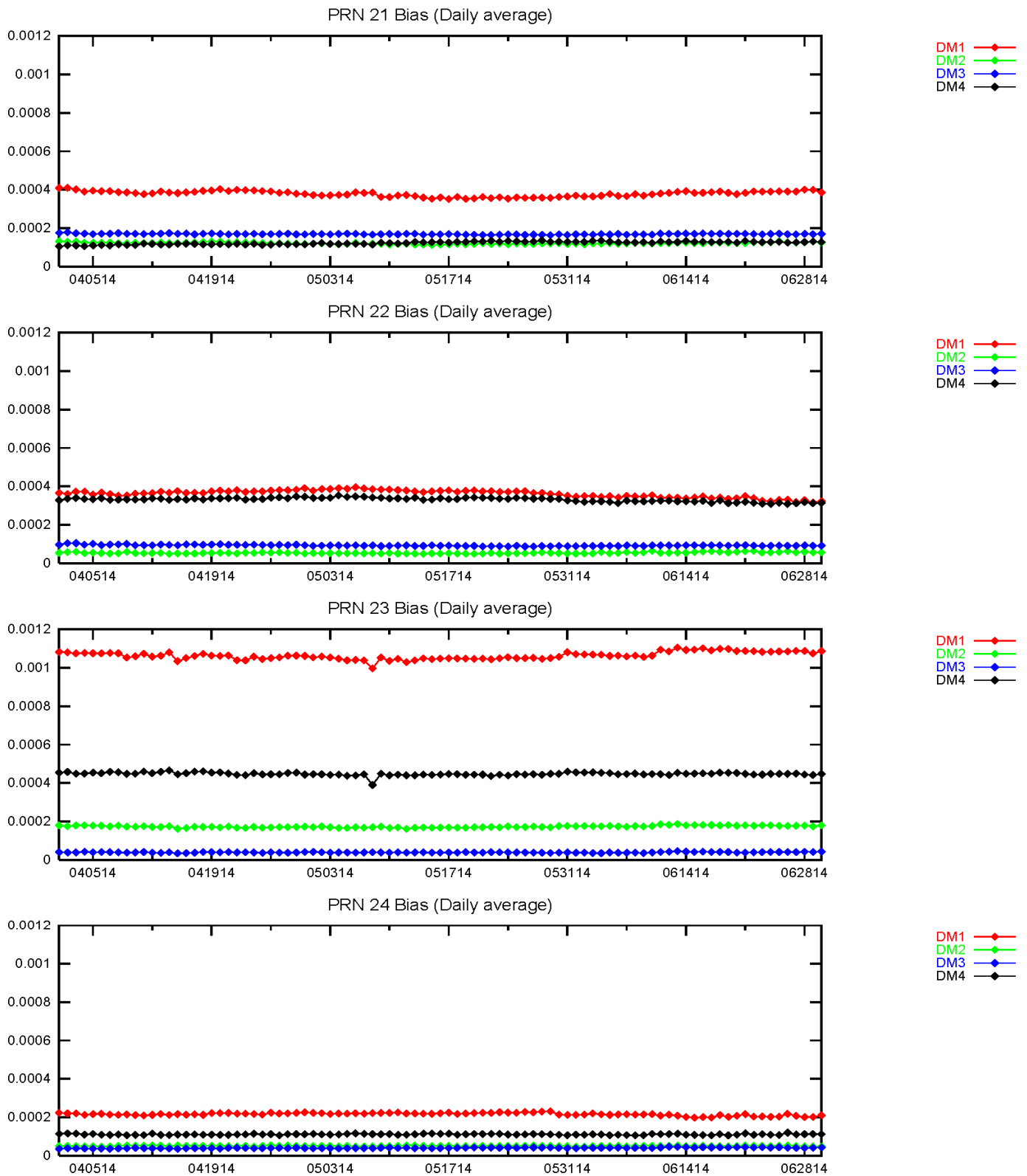


Figure 11-9 PRN Bias Average Trend (PRN 25 – PRN 28)

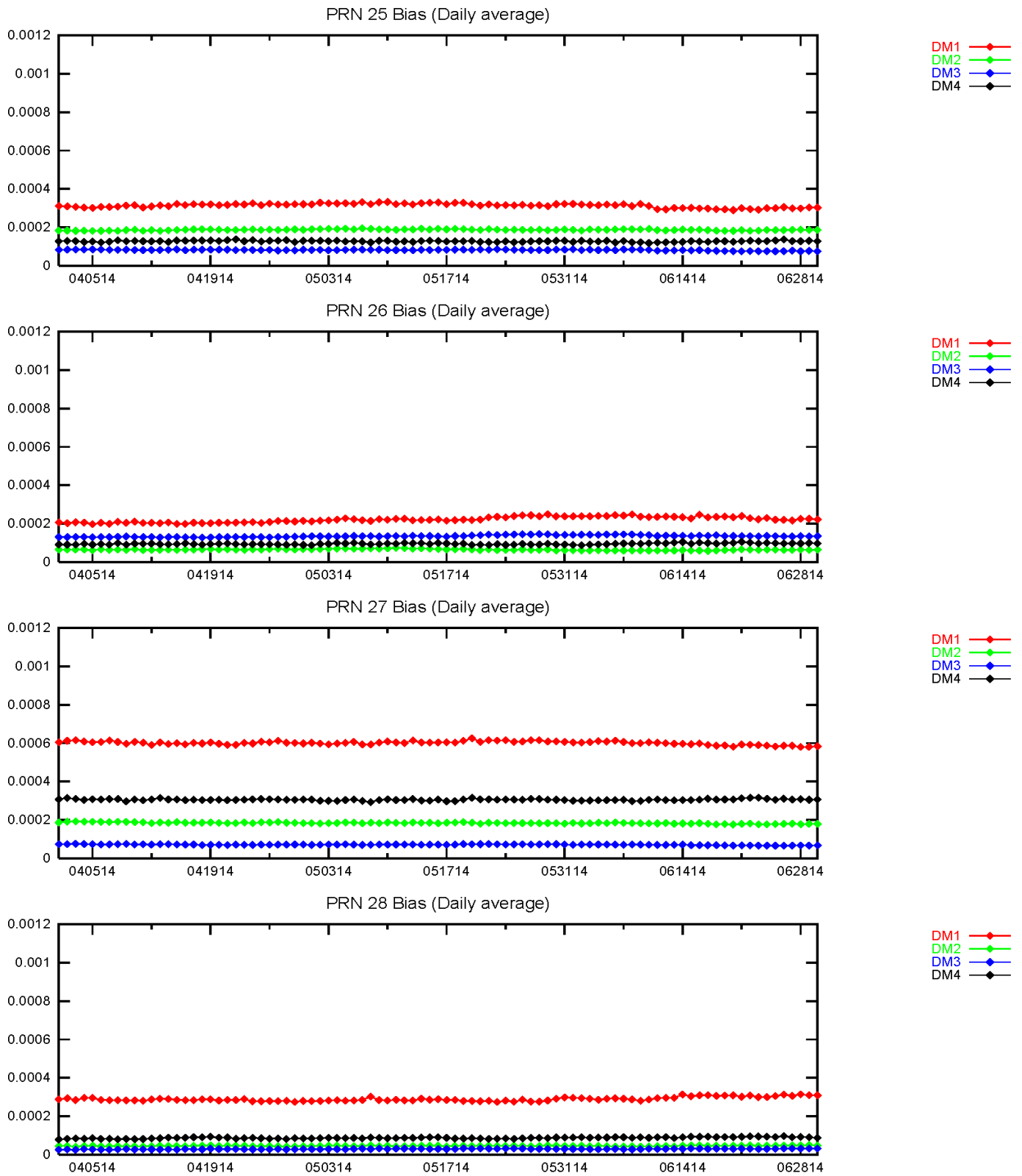
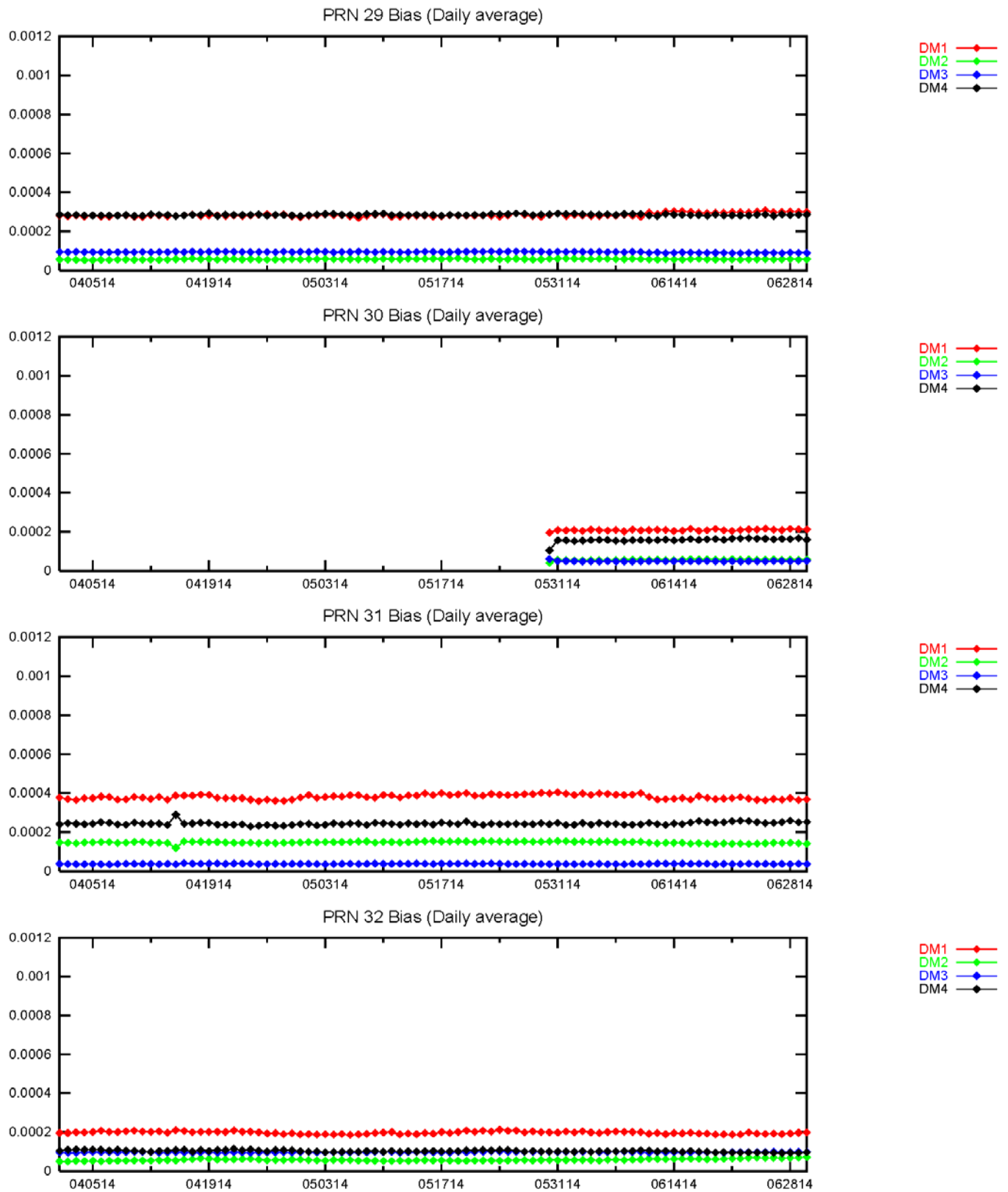


Figure 11-10 PRN Bias Average Trend (PRN 29 – PRN 32)



11.4 SQM Trips

SQM trip occurs when the estimated deformation exceeds threshold. There were no SQM trips for this quarter.

12.0 G3 RECEIVER ANALYSIS

The WAAS G3 receiver analysis determines the position and range domain performance of the new Novatel G3 receiver as compared to the currently fielded Novatel G2 receiver. In preparation for a full constellation of dual civil frequency GPS satellites (L1/L5), the WAAS system will be upgraded with new receivers in order to fully recognize the benefit of GPS modernization. The receivers have already undergone extensive factory testing by the manufacturer and the first test receivers were delivered to the Federal Aviation Administration in October 2013. The new receivers were setup at six existing WAAS reference sites (WRS) using the existing antenna subsystems and reference clocks for input. The six sites are:

Nashua, New Hampshire (Boston)	Honolulu, Hawaii
Aurora, Illinois	Miami, Florida
Fairbanks, Alaska	Seattle, Washington

Two Novatel G3 receivers were installed at each site for a total of twelve test receivers. The test receiver navigation error data was collected and processed to determine position accuracy at each location. This was accomplished by utilizing the GPS/WAAS position solution tool to compute a RTCA DO-229D weighted least squares user navigation solution once every second for the month of March 2014. The G3 test receivers are marked as 4 and 5, while the fielded G2 receivers are marked 1 and 2 for each site. Receivers 1 and 4 are tied to the same antenna and clock hardware, as are receivers 2 and 5.

12.1 G3 Position Accuracy

Table 12-1 lists the receivers used in the PA analysis. Table 12-2 shows PA horizontal and vertical position accuracy maintained for 95% of the time at LP, LPV and LNAV/VNAV operational service levels for the quarter. Figures 12-1 to 12-4 show the daily horizontal and vertical 95% accuracy for LPV operational service level for the reporting period. Note that WAAS accuracy statistics presented are compiled only when all WAAS corrections (fast, long term, and ionospheric) for at least 4 satellites are available. This is referred to as PA navigation mode. The percentage of time that PA navigation mode was supported by WAAS at each receiver is also shown in Table 12-2. The Honolulu site is an exception to the rule because it so far outside CONUS. Honolulu was evaluated solely in NPA mode for all position results.

Table 12-3 shows the maximum LPV error statistics. The column marked 'Horizontal Error' shows the maximum position errors while the calculated HPL meets the LPV service level defined in Table 1-1. The column marked 'Vertical Error' shows the maximum position errors while the calculated VPL meets the LPV service level. The columns marked 'Horizontal Error/HPL' and 'Vertical Error/VPL' show the ratio of position error to protection level at the time the maximum error occurred. The columns marked 'Horizontal Maximum Ratio' and 'Vertical Maximum Ratio' show the maximum position error to protection level ratio for the quarter.

During this reporting period, the maximum 95% CONUS horizontal and vertical LPV errors are 1.059 meters and 1.758 meters at Miami-A, respectively. The minimum 95% CONUS horizontal and vertical LPV errors are 0.673 meters and 0.993 meters at Chicago-B and Chicago-A, respectively.

Table 12-1 PA Evaluation Sites for G3 Receivers

Location	Days Evaluated	Samples
Boston-A	90	7785730
Boston-B	91	7852863
Chicago-A	91	7831880
Chicago-B	91	7844840
Fairbanks-A	82	7047808
Fairbanks-B	80	6945433
Honolulu-A	87	7489248
Honolulu-B	84	7283460
Miami-A	91	7854632
Miami-B	91	7854983
Seattle-A	89	7659249
Seattle-B	88	7613586

Table 12-2 PA 95% Horizontal and Vertical Accuracy for G3 Receivers

Location	Horizontal (HAL = 40m) (Meters)	Horizontal (HAL=556m) (Meters)	Vertical (VAL=50m) (Meters)	Percentage in PA mode (%)
Boston-A	0.840	0.840	1.105	100
Boston-B	0.777	0.777	1.120	100
Chicago-A	0.927	0.927	0.993	100
Chicago-B	0.673	0.673	1.009	100
Fairbanks-A	0.879	0.880	1.684	100
Fairbanks-B	0.753	0.754	1.479	100
Miami-A	1.059	1.059	1.758	100
Miami-B	1.042	1.042	1.455	100
Seattle-A	0.777	0.779	1.037	100
Seattle-B	0.927	0.927	1.047	100
Honolulu-A *	7.398	17.502	-	95.25
Honolulu-B *	7.315	17.383	-	92.64

* Note: Because Honolulu sites are so far outside CONUS, they were evaluated for position in Non-Precision Approach (NPA) mode only. Because NPA mode was used, no vertical accuracy is given. The percentage value for Honolulu is the percent of total time evaluated of March 2014.

Table 12-3 Maximum LPV Error Statistics for G3 Receivers

Location	Horizontal Error (m)	Horizontal Error/HPL	Horizontal Maximum Ratio	Vertical Error (m)	Vertical Error/VPL	Vertical Maximum Ratio
Boston-A	2.917	0.093	0.171	3.262	0.084	0.147
Boston-B	1.998	0.151	0.179	3.818	0.097	0.168
Chicago-A	3.018	0.254	0.257	3.873	0.082	0.282
Chicago-B	4.587	0.178	0.222	5.223	0.112	0.211
Fairbanks-A	2.581	0.121	0.204	11.700	0.582	0.582
Fairbanks-B	2.371	0.111	0.186	4.375	0.090	0.237
Miami-A	3.651	0.116	0.199	5.465	0.285	0.285
Miami-B	4.068	0.134	0.182	5.038	0.103	0.209
Seattle-A	4.588	0.453	0.459	7.134	0.402	0.403
Seattle-B	2.483	0.142	0.200	3.917	0.162	0.201
Honolulu-A *	16.599	0.220	-	30.932	0.337	-
Honolulu-B *	16.625	0.220	-	30.160	0.433	-

* Note: Because Honolulu sites are so far outside CONUS, they were evaluated for position in Non-Precision Approach (NPA) mode only. Because NPA mode was used, no vertical accuracy is given. The percentage value for Honolulu is the percent of total time evaluated of March 2014.

Figure 12-1 LPV 95% Horizontal Accuracy

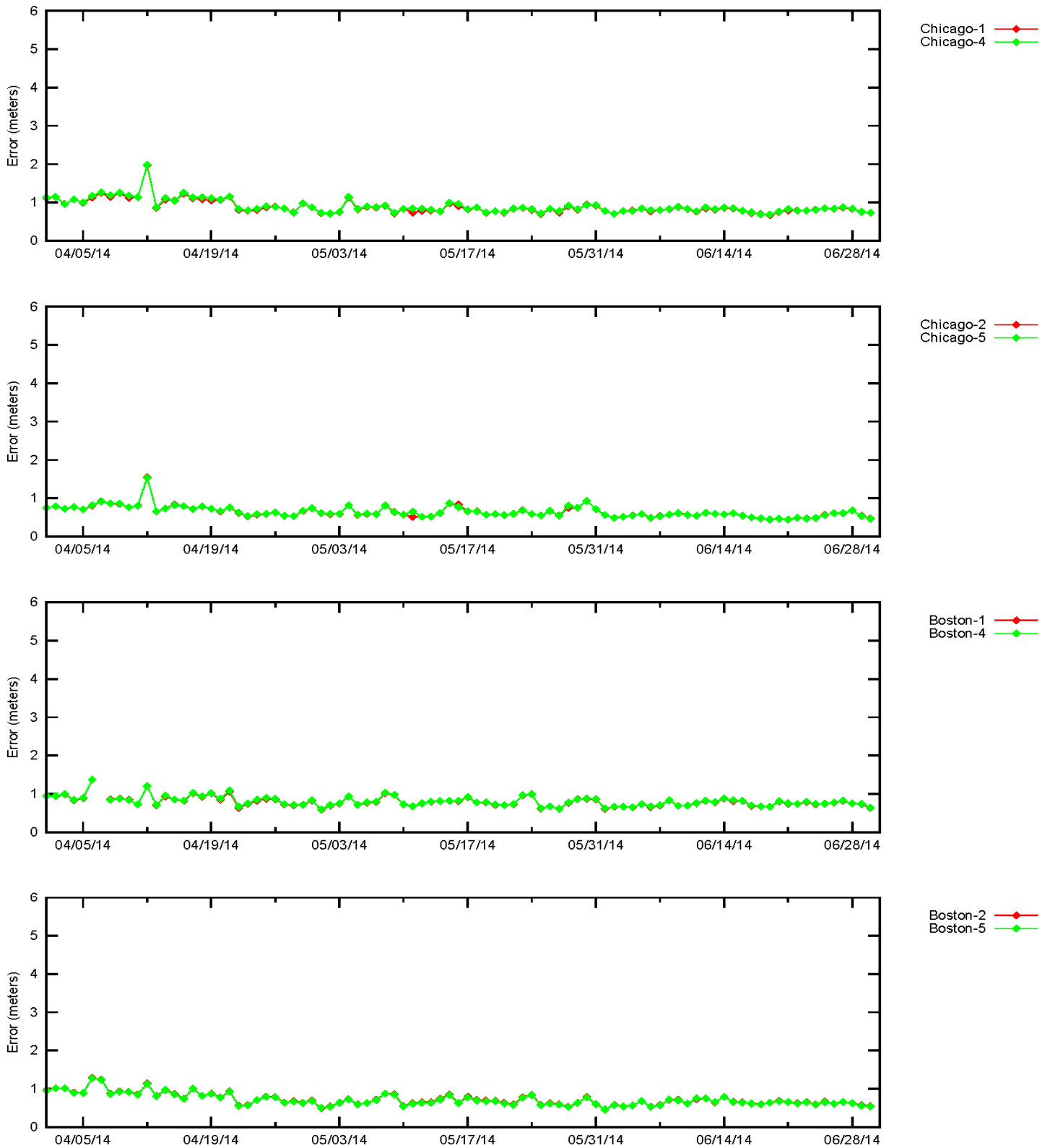


Figure 12-2 LPV 95% Horizontal Accuracy

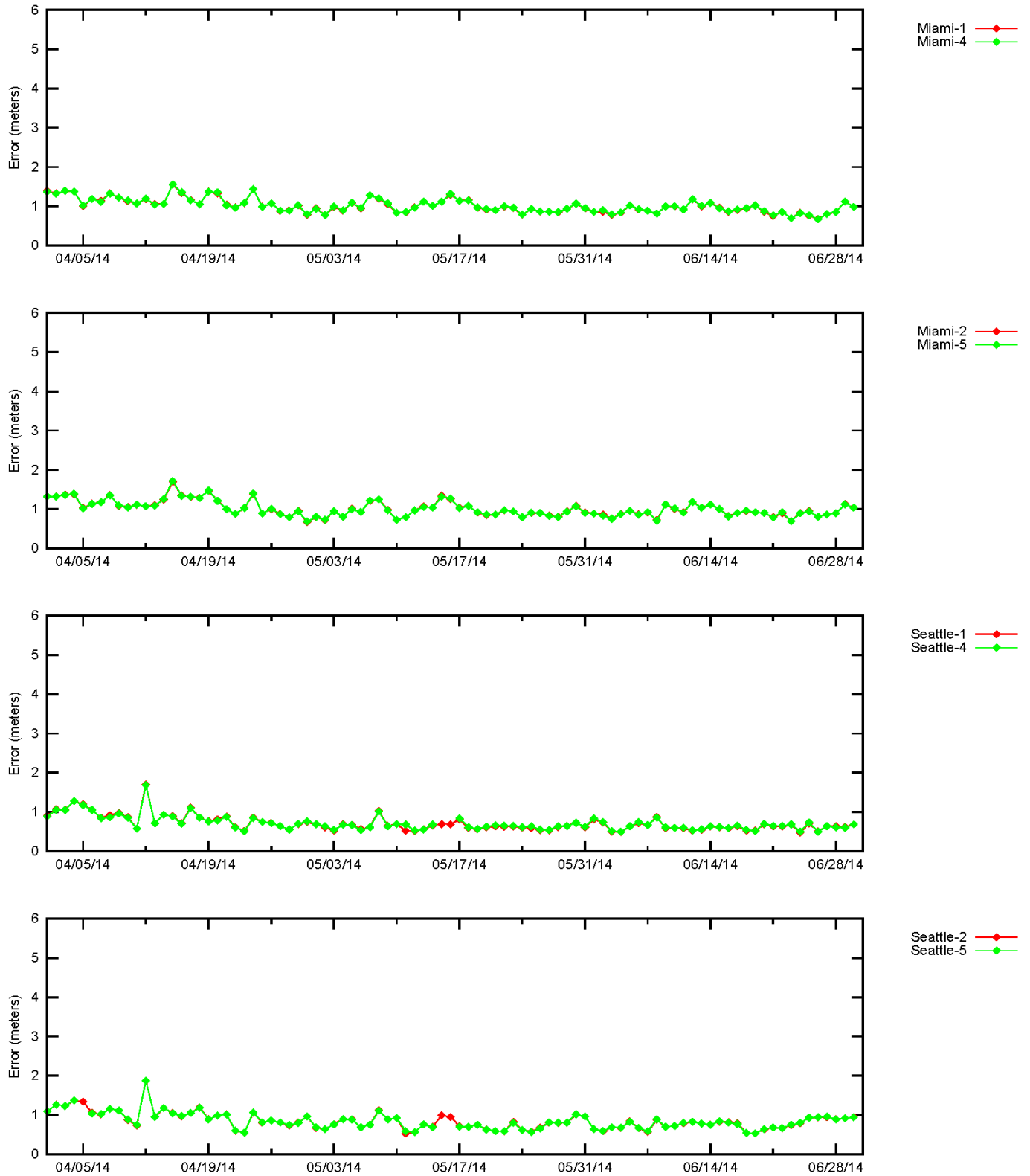


Figure 12-3 LPV 95% Vertical Accuracy

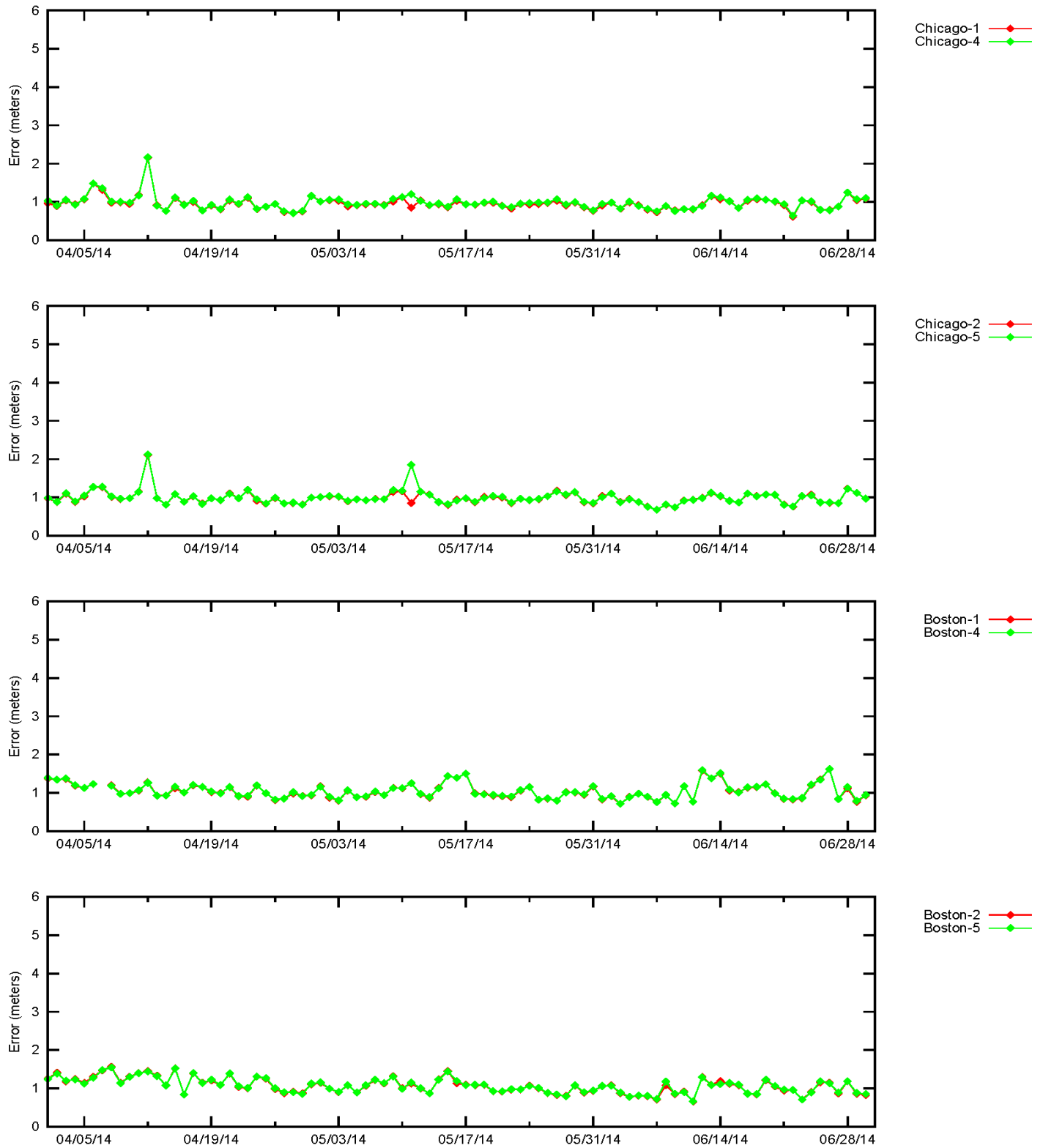


Figure 12-4 LPV 95% Vertical Accuracy

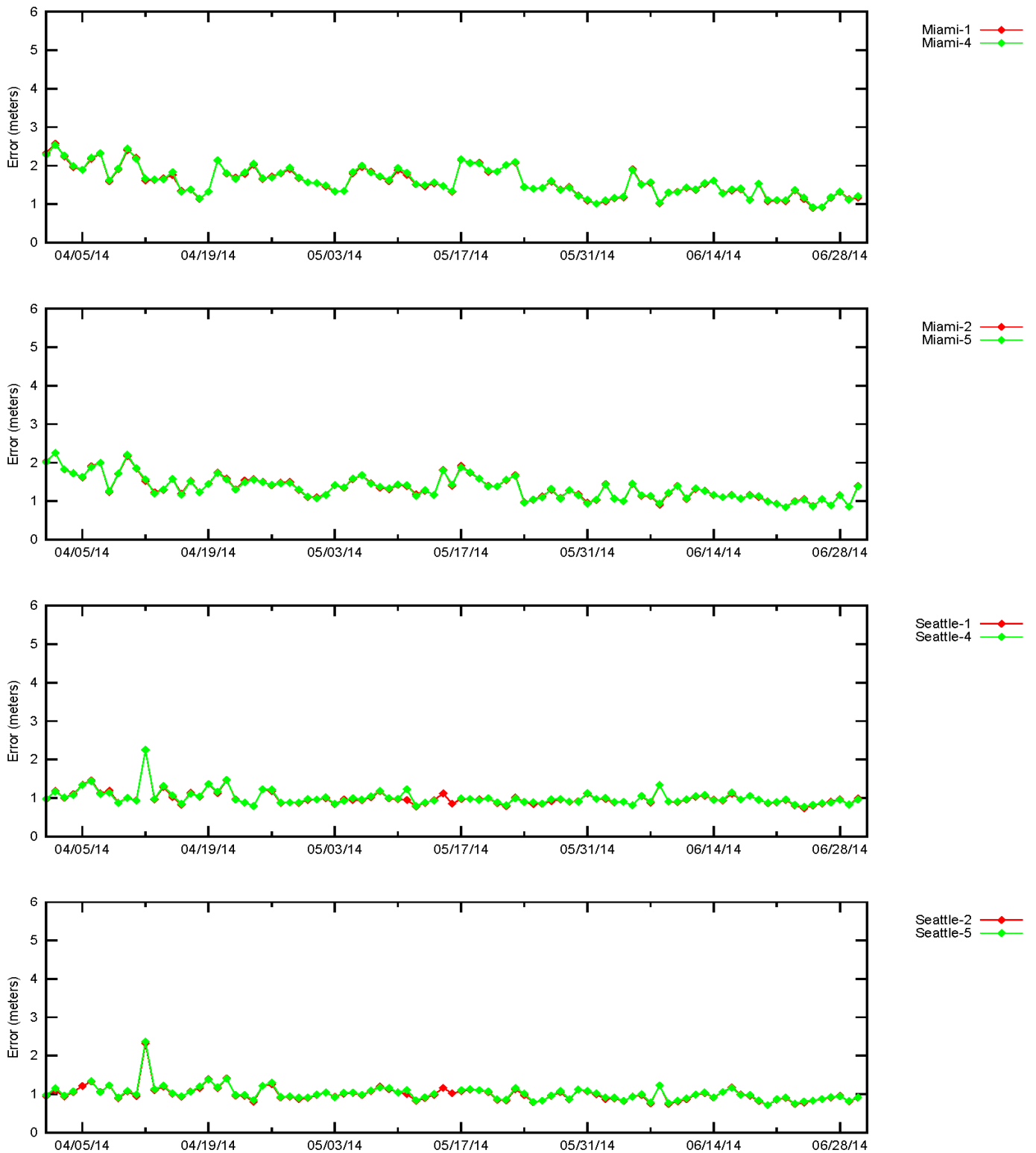


Figure 12-5 LPV Horizontal Error Distribution Histogram

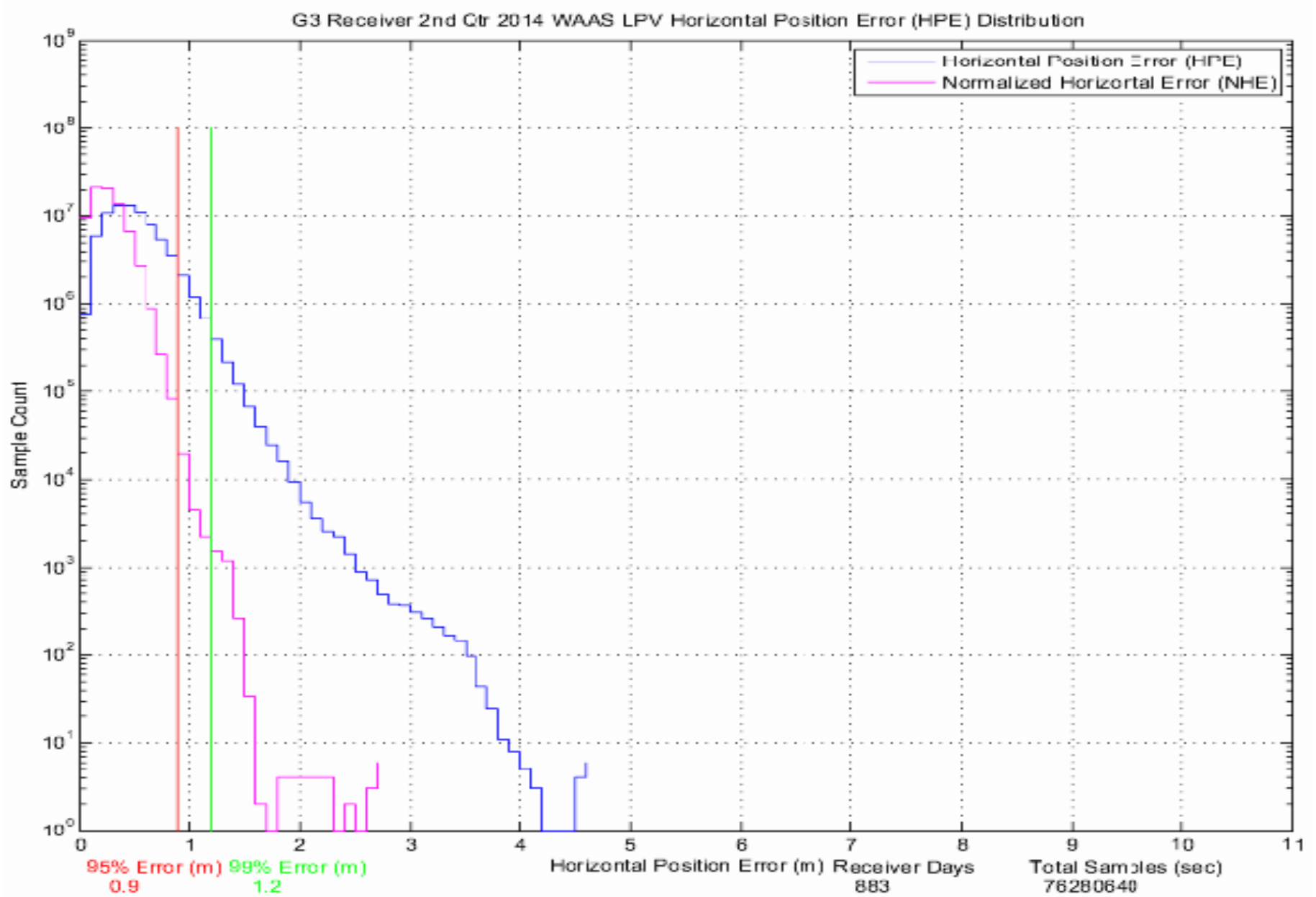


Figure 12-6 LPV Vertical Error Distribution Histogram

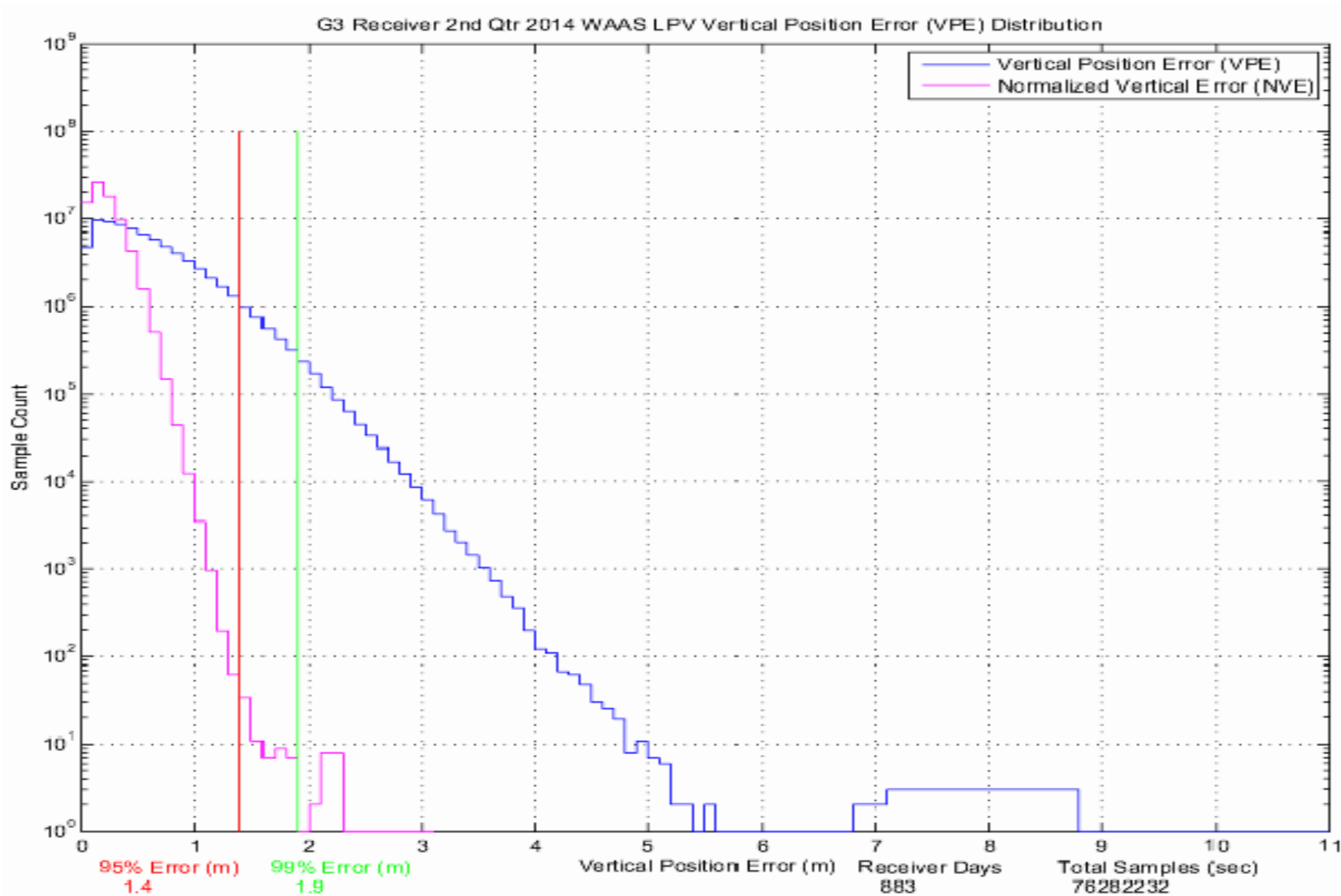


Figure 12-7 LPV 95% Horizontal Error Bounding Triangle Chart

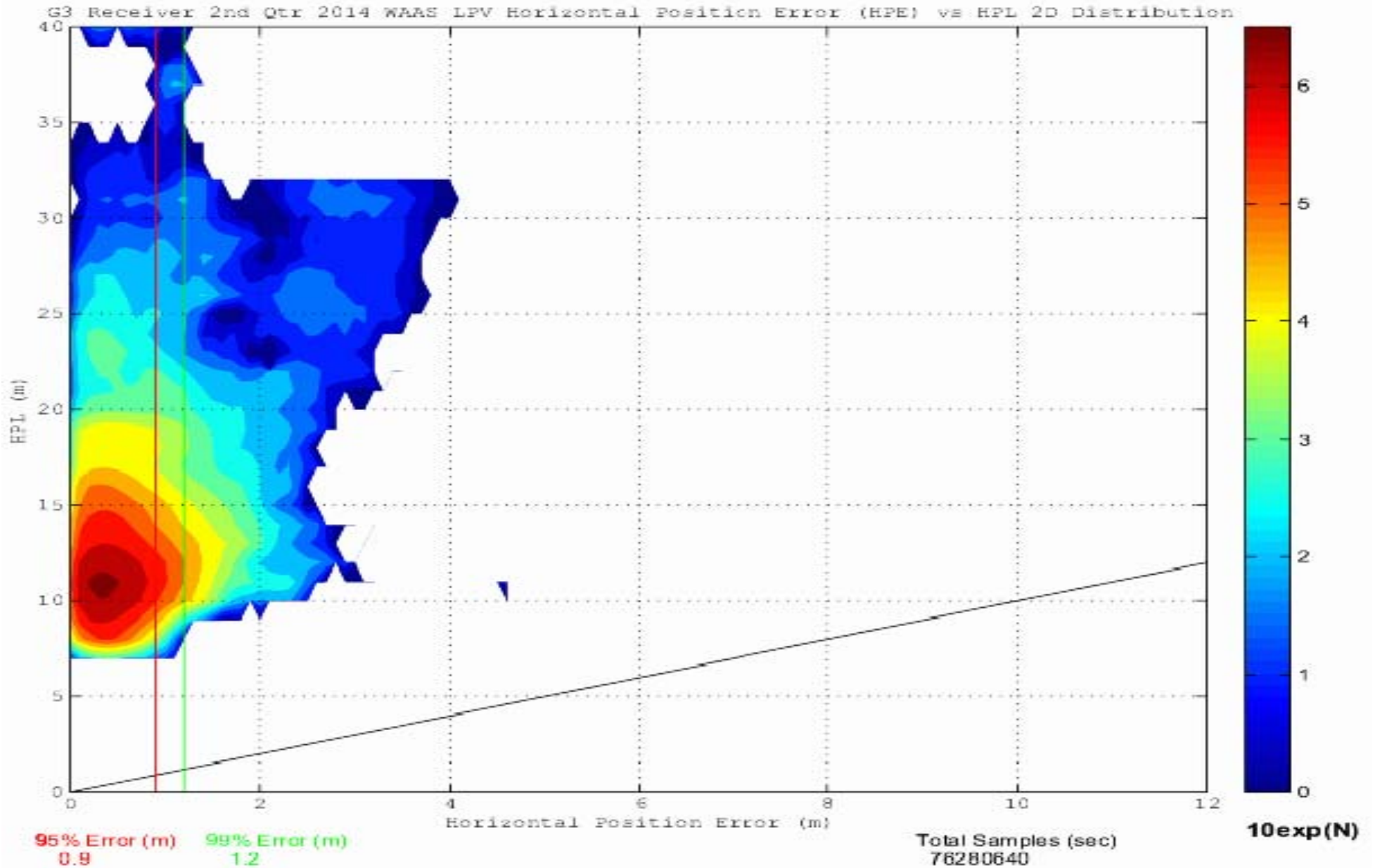
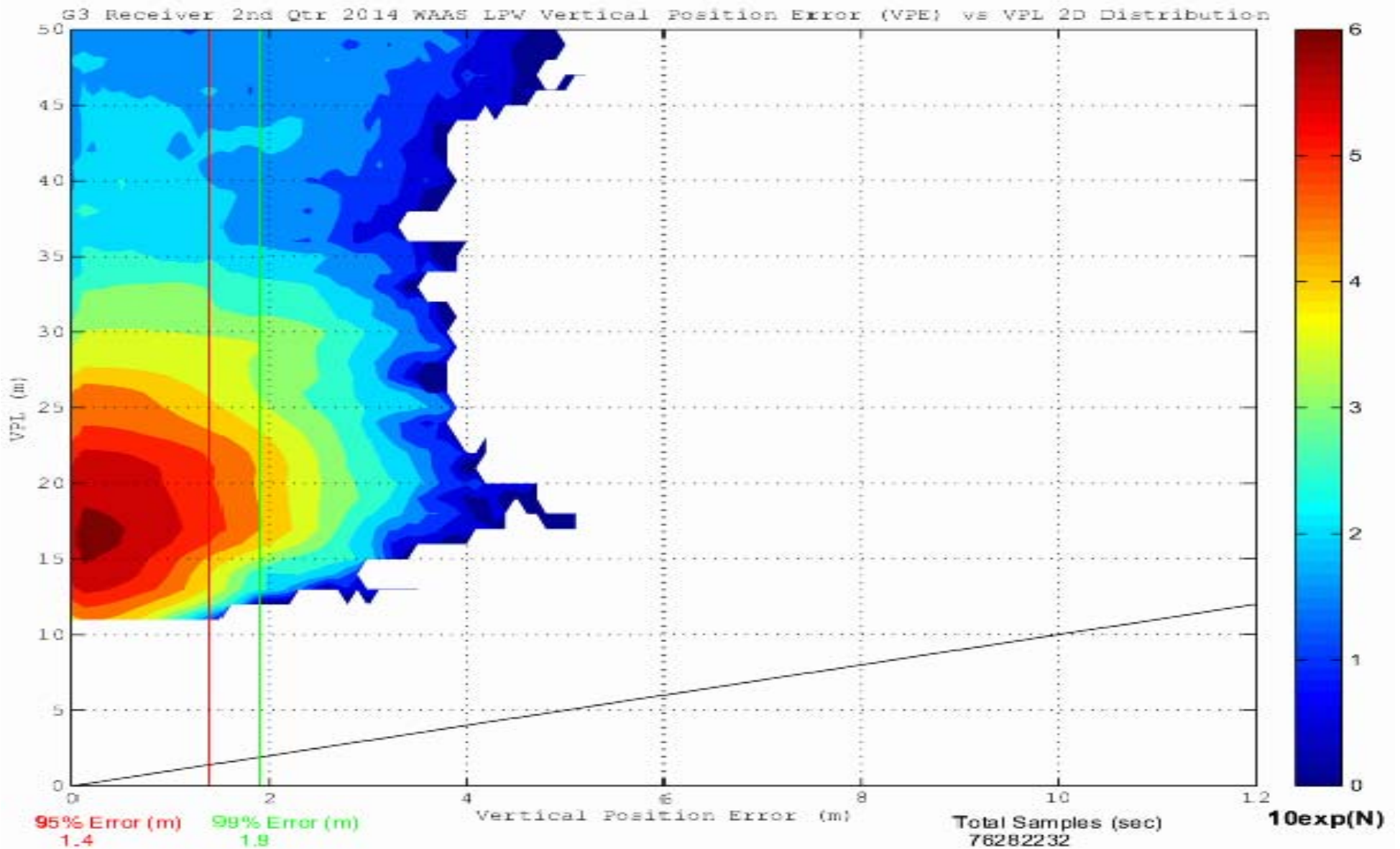


Figure 12-8 LPV 95% Vertical Error Bounding Triangle Chart



12.2 G3 SV Range Accuracy

Range accuracy evaluation computes the probability that the WAAS User Differential Range Error (UDRE) and Grid Ionospheric Vertical Error (GIVE) statistically bound 99.9% of the range residuals for each satellite tracked by the receiver. A UDRE is broadcast by the WAAS for each satellite that is monitored by the system and the 99.9% bound (3.29 sigma) of the residual error on a pseudorange after application of fast and long-term corrections is checked. The pseudorange residual error is determined by taking the difference between the raw pseudorange and a calculated reference range. The reference range is equal to the true range between the corrected satellite position and surveyed user antenna plus all corrections (WAAS Fast Clock, WAAS Long-Term Clock, WAAS Ionospheric delay, Tropospheric delay, Receiver Clock Bias, and Multipath). Since the true ionospheric delay and multipath error are not precisely known, the estimated variance in these error sources are added to the UDRE before the comparing it to the residual error. GPS satellite range residual errors were calculated for the twelve test receivers during the period. Table 12-4 and 12-5 show the range error 95% index and 99.9% (3.29 sigma) bounding statistics for each SV at the selected locations. A GIVE is broadcast by the WAAS for each IGP that is monitored by the system and the 99.9% (3.29 sigma) bound of the ionospheric error is checked. The WAAS broadcasts the ionospheric model using IGP's at predefined geographic locations. Each IGP contains the vertical ionospheric delay and the error in that delay in the form of the GIVE. The ionospheric error is determined by taking the difference between the WAAS vertical ionospheric delay interpolated from the IGP's and GPS dual frequency measurement at that GPS satellite. GPS satellite ionospheric errors were calculated for the twelve test receivers during the period. Table 12-6 and 12-7 show the ionospheric error 95% index and 99.9% (3.29 sigma) bounding statistics for each SV at the test locations.

Table 12-4 Range Error 95% Index and 3.29 Sigma Bounding

Site → SV ↓	Chicago 4		Chicago 5		Boston 4		Boston 5		Seattle 4		Seattle 5	
	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)	95% Range Error	3.29 Sigma Bounding(%)
1	3.398	100	3.085	100	2.910	100	3.095	100	2.716	100	2.950	100
2	2.424	100	2.612	100	2.444	100	2.274	100	2.305	100	2.558	100
3	1.776	100	1.579	100	1.146	100	1.158	100	0.936	100	1.313	100
4	1.584	100	1.891	100	1.358	100	1.504	100	1.604	100	1.519	100
5	1.559	100	1.651	100	1.755	100	1.760	100	1.948	100	1.744	100
6	2.832	100	3.497	99.7552	2.824	100	2.988	100	2.228	100	2.755	100
7	1.463	100	1.725	100	1.434	100	1.196	100	1.144	100	1.016	100
8	1.250	100	1.267	100	1.496	100	1.515	100	0.792	100	0.827	100
9	1.457	100	1.401	100	1.368	100	1.549	100	0.748	100	0.865	100
10	1.268	100	0.916	100	1.104	100	0.842	100	1.085	100	1.362	100
11	1.469	100	0.940	100	1.583	100	1.081	100	2.583	100	1.441	100
12	1.744	100	1.323	100	1.469	100	2.449	100	1.241	100	1.071	100
13	1.277	100	1.193	100	1.121	100	1.622	100	0.707	100	0.804	100
14	1.437	100	1.177	100	1.073	100	0.831	100	1.246	100	1.223	100
15	1.280	100	1.671	100	1.634	100	1.794	100	1.053	100	0.975	100
16	2.172	100	1.499	100	1.470	100	1.041	100	1.111	100	1.450	100
17	1.192	100	1.050	100	1.529	100	1.078	100	0.857	100	1.175	100
18	1.347	100	1.252	100	1.120	100	1.136	100	1.474	100	1.536	100
19	2.519	100	2.463	100	2.910	100	2.330	100	2.819	100	2.649	100
20	1.149	100	1.153	100	1.216	100	1.016	100	1.347	100	1.313	100
21	1.186	100	1.468	100	1.487	100	1.107	100	1.469	100	1.545	100
22	2.279	100	2.009	100	2.324	100	2.222	100	2.754	100	2.928	100
23	1.587	100	1.640	100	1.842	100	1.675	100	2.060	100	2.092	100
24	2.697	100	3.020	99.9980	2.849	100	3.078	100	2.693	100	2.427	100
25	3.164	100	2.472	100	2.475	100	2.458	100	2.038	100	2.092	100
26	1.365	100	1.450	100	1.576	100	1.911	100	1.465	100	0.841	100
27	2.700	100	2.327	100	2.264	100	2.340	100	2.083	100	1.786	100
28	1.093	100	1.335	100	1.649	100	1.596	100	1.363	100	1.924	100
29	1.456	100	1.630	100	1.293	100	1.621	100	1.240	100	1.784	100
30	2.428	100	2.351	100	2.550	100	2.239	100	1.784	100	2.021	100
31	0.940	100	1.994	100	0.912	100	1.155	100	1.064	100	0.929	100
32	0.942	100	0.944	100	1.014	100	1.061	100	1.019	100	1.131	100
135	2.299	100	1.742	100	3.191	100	1.657	100	1.870	100	2.156	100
138	2.261	100	1.877	100	1.341	100	1.436	100	1.637	100	1.396	100

Table 12-5 Range Error 95% Index and 3.29 Sigma Bounding

Site → SV ↓	Miami 4		Miami 5		Fairbanks 4		Fairbanks 5	
	95% Range Error	3.29 Sigma Bounding (%)	95% Range Error	3.29 Sigma Bounding (%)	95% Range Error	3.29 Sigma Bounding (%)	95% Range Error	3.29 Sigma Bounding (%)
1	2.919	100	3.505	100	3.030	100	2.988	99.9932
2	2.893	100	2.701	100	2.600	99.9139	2.399	100
3	0.998	100	1.429	100	1.397	100	1.387	100
4	1.981	100	1.531	100	1.579	100	1.774	99.9999
5	1.234	100	1.569	100	1.626	100	1.642	100
6	3.443	100	2.823	100	2.687	100	2.685	100
7	1.317	100	1.068	100	1.386	100	1.391	100
8	0.994	100	1.167	100	1.313	100	1.115	100
9	1.402	100	1.384	100	1.695	100	1.411	100
10	1.496	100	1.348	100	1.532	100	1.227	100
11	1.584	100	1.422	100	1.883	99.9982	1.486	100
12	1.357	100	1.419	100	1.255	100	1.438	100
13	1.496	100	1.306	100	1.376	100	1.243	100
14	1.351	100	1.059	100	1.283	100	1.506	100
15	1.360	100	1.666	100	1.290	100	1.092	100
16	1.328	100	1.727	100	1.696	100	1.594	100
17	1.343	100	1.053	100	0.979	100	1.095	100
18	1.153	100	1.431	100	1.865	100	1.751	100
19	2.531	100	2.876	100	2.773	99.9391	2.861	100
20	1.481	100	1.742	100	1.781	100	1.587	100
21	2.256	100	1.711	100	1.702	100	1.831	100
22	2.439	100	2.402	100	2.863	99.9994	2.924	100
23	2.119	100	1.960	100	2.498	100	2.132	100
24	2.629	100	2.893	100	2.642	100	2.677	100
25	2.443	100	2.419	100	2.164	100	2.394	100
26	1.018	100	1.336	100	1.494	100	1.240	100
27	2.092	100	2.527	100	2.082	100	2.223	100
28	2.351	100	1.618	100	1.724	100	1.605	100
29	1.938	100	1.414	100	1.486	100	1.898	100
30	2.049	100	2.409	100	3.091	100	2.275	100
31	1.744	100	1.385	100	1.239	100	1.360	100
32	1.633	100	1.392	100	1.247	100	1.366	100
135	1.510	100	2.689	100	5.237	100	4.018	100
138	2.160	100	1.646	100	3.881	100	3.400	100

Table 12-6 Ionospheric Error 95% Index and 3.29 Sigma Bounding

Site → SV ↓	Chicago 4		Chicago 5		Boston 4		Boston 5		Seattle 4		Seattle 5	
	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)
1	2.381	100	2.278	100	2.241	100	2.282	100	2.005	100	1.989	100
2	1.662	100	1.778	100	1.819	100	1.625	100	1.718	100	1.961	100
3	0.938	100	0.836	100	0.527	100	0.637	100	0.536	100	0.519	100
4	1.035	100	1.501	100	0.800	100	1.291	100	1.093	100	0.726	100
5	1.020	100	1.053	100	1.082	100	1.103	100	1.363	100	1.141	100
6	2.473	100	2.992	100	2.075	100	2.595	100	1.868	100	2.060	100
7	0.704	100	0.808	100	0.604	100	0.662	100	0.738	100	0.568	100
8	0.559	100	0.557	100	0.662	100	0.640	100	0.344	100	0.381	100
9	0.636	100	0.736	100	0.780	100	0.704	100	0.473	100	0.456	100
10	0.438	100	0.422	100	0.542	100	0.476	100	0.536	100	0.746	100
11	0.524	100	0.420	100	0.512	100	0.330	100	1.315	100	0.726	100
12	0.747	100	0.709	100	0.704	100	1.125	100	0.668	100	0.496	100
13	0.587	100	0.610	100	0.505	100	0.766	100	0.363	100	0.372	100
14	0.677	100	0.568	100	0.398	100	0.403	100	0.903	100	0.750	100
15	0.747	100	1.030	100	0.798	100	1.019	100	0.589	100	0.552	100
16	0.973	100	0.599	100	0.637	100	0.558	100	0.680	100	0.822	100
17	0.917	100	0.788	100	1.068	100	0.713	100	0.618	100	0.559	100
18	0.801	100	0.738	100	0.898	100	0.781	100	0.970	100	1.046	100
19	1.525	100	1.576	100	1.709	100	1.513	100	1.899	100	1.805	100
20	0.508	100	0.461	100	0.540	100	0.372	100	0.828	100	0.804	100
21	0.737	100	0.923	100	1.119	100	0.766	100	0.918	100	0.989	100
22	1.898	100	1.623	100	2.007	100	1.767	100	1.989	100	2.164	100
23	1.133	100	1.189	100	1.497	100	1.169	100	1.523	100	1.617	100
24	1.837	100	1.979	100	1.784	100	1.935	100	1.852	100	1.796	100
25	1.620	100	1.434	100	1.470	100	1.438	100	1.442	100	1.351	100
26	0.688	100	0.785	100	0.801	100	0.999	100	0.827	100	0.484	100
27	1.663	100	1.583	100	1.369	100	1.537	100	1.395	100	1.199	100
28	0.414	100	0.551	100	1.000	100	0.682	100	0.702	100	1.136	100
29	0.865	100	0.925	100	0.787	100	0.846	100	0.824	100	0.883	100
30	1.538	100	1.541	100	1.492	100	1.513	100	1.339	100	1.325	100
31	0.599	100	1.162	100	0.380	100	0.630	100	0.586	100	0.560	100
32	0.431	100	0.386	100	0.426	100	0.472	100	0.348	100	0.386	100

Table 12-7 Ionospheric Error 95% Index and 3.29 Sigma Bounding

Site → SV ↓	Miami 4		Miami 5		Fairbanks 4		Fairbanks 5	
	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)	95% Iono Error	3.29 Sigma Bounding(%)
1	2.134	100	2.463	100	2.403	99.9996	2.362	99.4197
2	1.509	100	1.557	100	1.475	99.9659	1.430	100
3	0.802	100	1.054	100	0.717	100	0.640	100
4	1.695	100	1.396	100	0.986	100	0.995	100
5	1.131	100	1.178	100	0.739	100	0.789	100
6	2.686	100	1.992	100	2.130	100	1.807	100
7	0.819	100	0.719	100	0.875	100	0.951	100
8	0.694	100	0.577	100	0.805	100	0.611	100
9	0.907	100	0.865	100	1.027	100	1.029	100
10	0.443	100	0.588	100	0.563	100	0.634	100
11	0.686	100	0.700	100	0.670	100	0.577	100
12	0.810	100	0.826	100	0.665	100	0.837	100
13	0.916	100	0.804	100	0.868	100	0.843	100
14	0.617	100	0.545	100	0.595	100	0.656	100
15	0.948	100	0.978	100	0.744	100	0.611	100
16	0.729	100	0.721	100	0.618	100	0.676	100
17	0.791	100	0.654	100	0.722	100	0.744	100
18	0.621	100	0.811	100	0.903	100	0.913	100
19	1.497	100	1.651	100	1.568	99.9621	1.616	100
20	0.675	100	0.776	100	0.886	100	0.830	100
21	1.369	100	1.169	100	0.992	100	1.089	100
22	1.738	100	1.858	100	1.770	99.8549	1.781	100
23	1.598	100	1.672	100	1.460	99.8448	1.260	100
24	1.934	100	1.908	100	2.200	100	2.047	99.5945
25	1.543	100	1.461	100	1.675	100	1.665	99.7012
26	0.820	100	0.855	100	0.787	100	0.810	100
27	1.434	100	1.705	100	1.509	100	1.506	99.9939
28	1.374	100	0.759	100	0.698	100	0.684	100
29	1.205	100	1.011	100	0.842	100	0.971	100
30	1.788	100	1.753	100	1.814	100	1.532	100
31	0.808	100	0.760	100	0.661	100	0.586	100
32	0.938	100	0.813	100	0.705	100	0.784	100

12.3 G3 SQM

G3 SQM analysis includes the processing of data from 114 G2 receivers and 12 G3 receivers. The same analysis in Section 11 (SQM G2 only) is used in this section for the combined G2 and G3 data. G3 SQM monitoring effort includes the monitoring of PRN type biases, PRN biases, and SQM trips.

For this reporting period, there were no SQM anomalies observed.

Appendix A: Glossary

General Terms and Definitions

Alert. An alert is an indication provided by the GPS/WAAS equipment to inform the user when the positioning performance achieved by the equipment does not meet the integrity requirements.

Availability. The availability of a navigation system is the ability of the system to provide the required function and performance at the initiation of the intended operation. Availability is an indication of the ability of the system to provide usable service within the specified coverage area.

C&V. The Correction and Verification Subsystem.

CONUS. Continental United States.

Continuity. The continuity of a system is the ability of the total system (comprising all elements necessary to maintain aircraft position within the defined airspace) to perform its function without interruption during the intended operation. More specifically, continuity is the probability that the specified system performance will be maintained for the duration of a phase of operation, presuming that the system was available at the beginning of that phase of operation.

Coverage. The coverage provided by a radio navigation system is that surface area or space volume in which the signals are adequate to permit the user to determine position to a specified level of accuracy. Coverage is influenced by system geometry, signal power levels, receiver sensitivity, atmospheric noise conditions, and other factors that affect signal availability.

Dilution of Precision (DOP). The magnifying effect on GPS position error induced by mapping GPS ranging errors into position through the position solution. The DOP may be represented in any user local coordinate desired. Examples are HDOP for local horizontal, VDOP for local vertical, PDOP for all three coordinates, and TDOP for time.

DR. Discrepancy Report

Fault Detection and Exclusion (FDE). Fault detection and exclusion is a receiver processing scheme that autonomously provides integrity monitoring for the position solution, using redundant range measurements. The FDE consists of two distinct parts: fault detection and fault exclusion. The fault detection part detects the presence of an unacceptably large position error for a given mode of flight. Upon the detection, fault exclusion follows and excludes the source of the unacceptably large position error, thereby allowing navigation to return to normal performance without an interruption in service.

GEO. Geostationary Satellite.

Global Positioning System (GPS). A space-based positioning, velocity, and time system composed of space, control, and user segments. The space segment, when fully operational, will be composed of 24 satellites in six orbital planes. The control segment consists of five monitor stations, three ground antennas, and a master control station. The user segment consists of antennas and receiver-processors that provide positioning, velocity, and precise timing to the user.

Grid Ionospheric Vertical Error (GIVE). GIVES indicate the accuracy of ionospheric vertical delay correction at a geographically defined ionospheric grid point (IGP). WAAS transmits one GIVE for each IGP in the mask.

Hazardous Misleading Information (HMI). Hazardous misleading information is any position data, that is output, that has an error larger than the current protection level (HPL/VPL), without any indication of the error (e.g., alert message sequence).

Horizontal Alert Limit (HAL). The Horizontal Alert Limit (HAL) is the radius of a circle in the horizontal plane (the local plane tangent to the WGS-84 ellipsoid), with its center being at the true position, which describes the region that is

required to contain the indicated horizontal position with a probability of $1-10^{-7}$ per flight hour, for a particular navigation mode, assuming the probability of a GPS satellite integrity failure being included in the position solution is less than or equal to 10^{-4} per hour.

Horizontal Protection Level (HPL). The Horizontal Protection Level is the radius of a circle in the horizontal plane (the plane tangent to the WGS-84 ellipsoid), with its center being at the true position, which describes the region that is assured to contain the indicated horizontal position. It is based upon the error estimates provided by WAAS.

IGS. International GPS Service.

Ionospheric Grid Point (IGP). IGP is a geographically defined point for which the WAAS provides the vertical ionospheric delay.

LNAV. Lateral Navigation.

LP. Localizer Performance. LP is a WAAS operational service level with a HAL equal to 40 meters.

LPV. Localizer Performance with Vertical Guidance. LPV is a WAAS operational service level with a HAL equal to 40 meters and a VAL equal to 50 meters.

LPV 200. Localizer Performance with Vertical Guidance to 200 ft decision height. LPV 200 is a WAAS operational service level with a HAL equal to 40 meters and a VAL equal to 35 meters.

MOPS. Minimum Operational Performance Standards.

NANU. Notice Advisory to Navstar Users. NANU is an advisory message to inform users of a change in the GPS constellation. These messages inform users in advance of planned maintenance and also notify users of unscheduled outages.

Navigation Message. Message structure designed to carry navigation data.

Non-Precision Approach (NPA) Navigation Mode. The Non-Precision Approach navigation mode refers to the navigation solution operating with a minimum of four satellites with fast and long term WAAS corrections (no WAAS ionospheric corrections) available.

Position Solution. The use of ranging signal measurements and navigation data from at least four satellites to solve for three position coordinates and a time offset.

Precision Approach (PA) Navigation Mode. The Precision Approach navigation mode refers to the navigation solution operating with a minimum of four satellites with all WAAS corrections (fast, long term, and ionospheric) available.

RFI. Radio Frequency Interference.

Selective Availability. Protection technique employed by the DOD to deny full system accuracy to unauthorized users.

Signal Quality Monitor (SQM). SQM monitors correlator measurements to detect signal deformations that originate in the GPS or GEO satellites and ensures that the UDREs are sufficiently inflated to protect given the monitor's current observations.

Standard Positioning Service (SPS). Three-dimensional position and time determination capability provided to a user equipped with a minimum capability GPS SPS receiver in accordance with GPS national policy and the performance specifications.

SV. Space Vehicle.

User Differential Range Error (UDRE). UDRE's indicate the accuracy of combined fast and slow error corrections. WAAS transmits one UDRE for each satellite in the mask.

Vertical Alert Limit (VAL). The Vertical Alert Limit is half the length of a segment on the vertical axis (perpendicular to the horizontal plane of WGS-84 ellipsoid), with its center being at the true position, which describes the region that is required to contain the indicated vertical position with a probability of $1-10^{-7}$ per flight hour, for a particular navigation mode, assuming the probability of a GPS satellite integrity failure being included in the position solution is less than or equal to 10^{-4} per hour.

Vertical Protection Level (VPL). The Vertical Protection Level is half the length of a segment on the vertical axis (perpendicular to the horizontal plane of WGS-84 ellipsoid), with its center being at the true position, which describes the region that is assured to contain the indicated vertical position. It is based upon the error estimates provided by WAAS.

VNAV. Vertical Navigation.

Wide Area Augmentation System (WAAS). The WAAS is made up of an integrity reference monitoring network, processing facilities, geostationary satellites, and control facilities. Wide area reference stations and integrity monitors are widely dispersed data collection sites that contain GPS/WAAS ranging receivers that monitor all signals from the GPS, as well as the WAAS geostationary satellites. The reference stations collect measurements from the GPS and WAAS satellites so that differential corrections, ionospheric delay information, GPS/WAAS accuracy, WAAS network time, GPS time, and UTC can be determined. The wide area reference station and integrity monitor data are forwarded to the central data processing sites. These sites process the data in order to determine differential corrections, ionospheric delay information, and GPS/WAAS accuracy, as well as verify residual error bounds for each monitored satellite. The central data processing sites also generate navigation messages for the geostationary satellites and WAAS messages. This information is modulated on the GPS-like signal and broadcast to the users from geostationary satellites.

Appendix B: Additional Coverage Plots

This section includes coverage plots with 99% LPV 200 availability contour, 98% LPV availability contours, and 98% LP availability contours for the quarter. Figure B.1 shows CONUS coverage with 98% LP availability contour. Figure B.2 shows Alaska coverage with 98% LP availability contour. Figure B.3 shows CONUS coverage with 98% LPV availability contour. Figure B.4 shows Alaska coverage with 98% LPV availability contour. Figure B.5 shows CONUS coverage with 99% LPV 200 availability contour. Figure B.6 shows Alaska coverage with 99% LPV 200 availability contour.

Figure B-1 98% CONUS LP Availability Contour

**WAAS 98% LP Coverage Contours
April 1 – June 30, 2014**

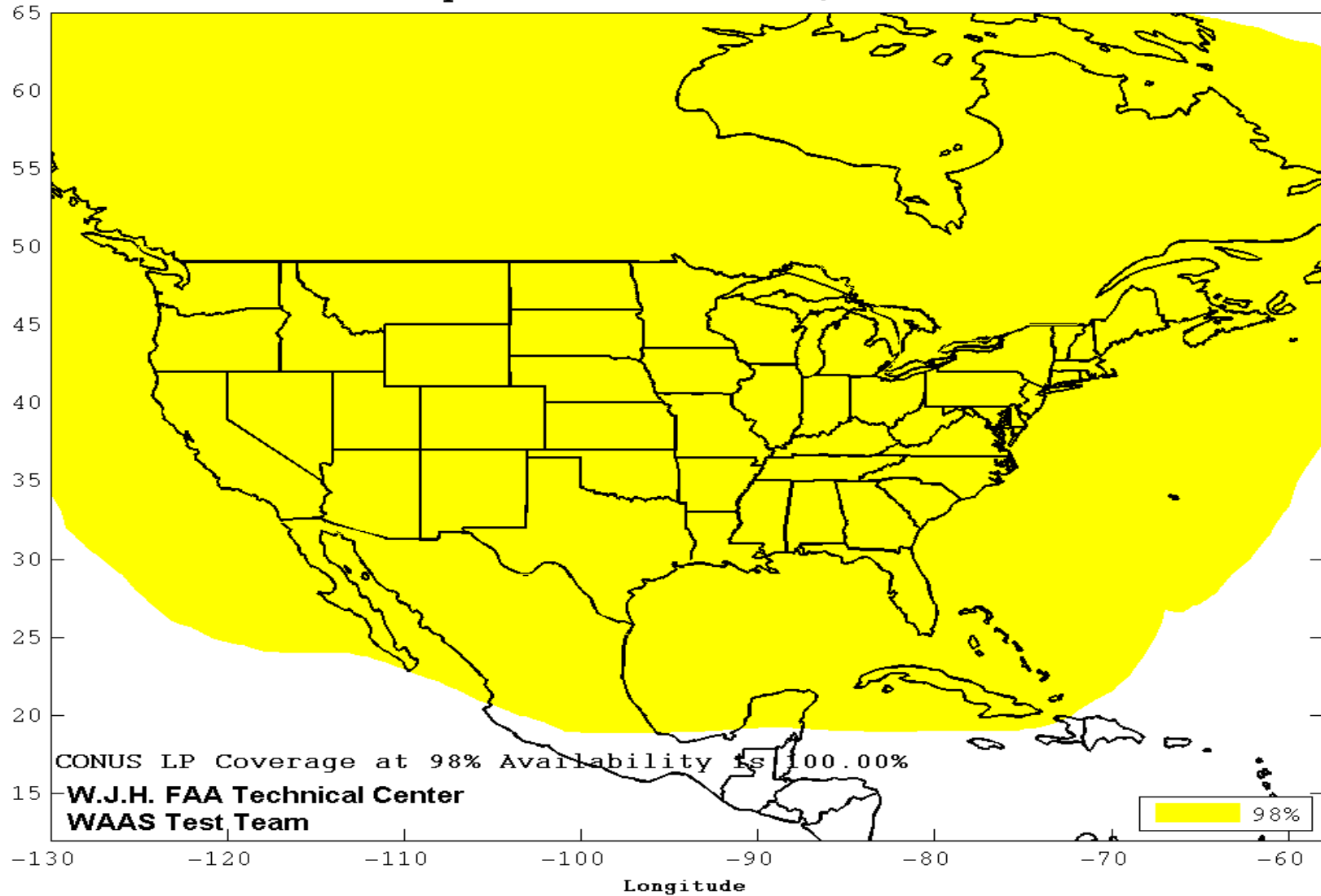


Figure B-2 98% Alaska LP Availability Contour

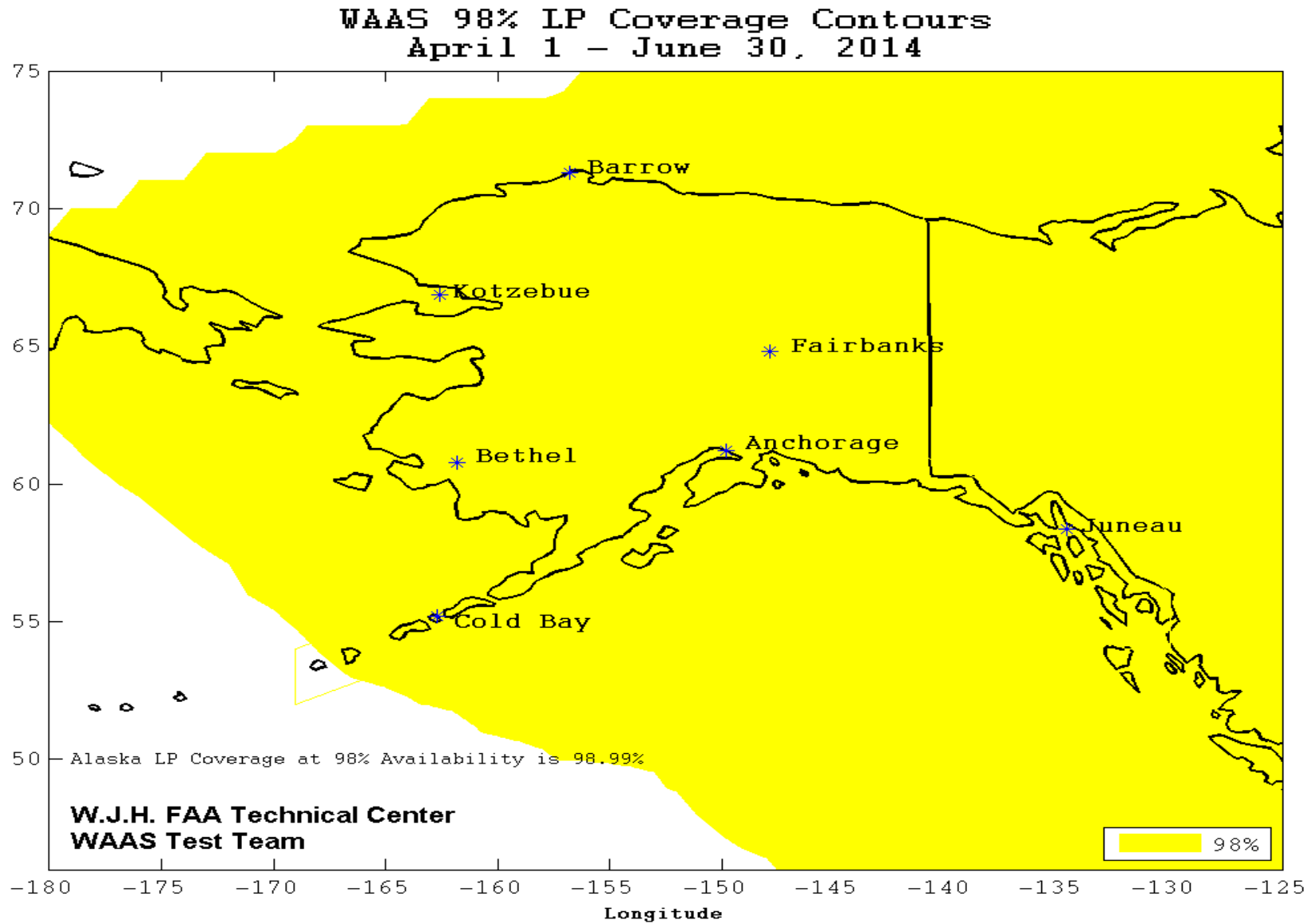


Figure B-3 98% CONUS LPV Availability Contour

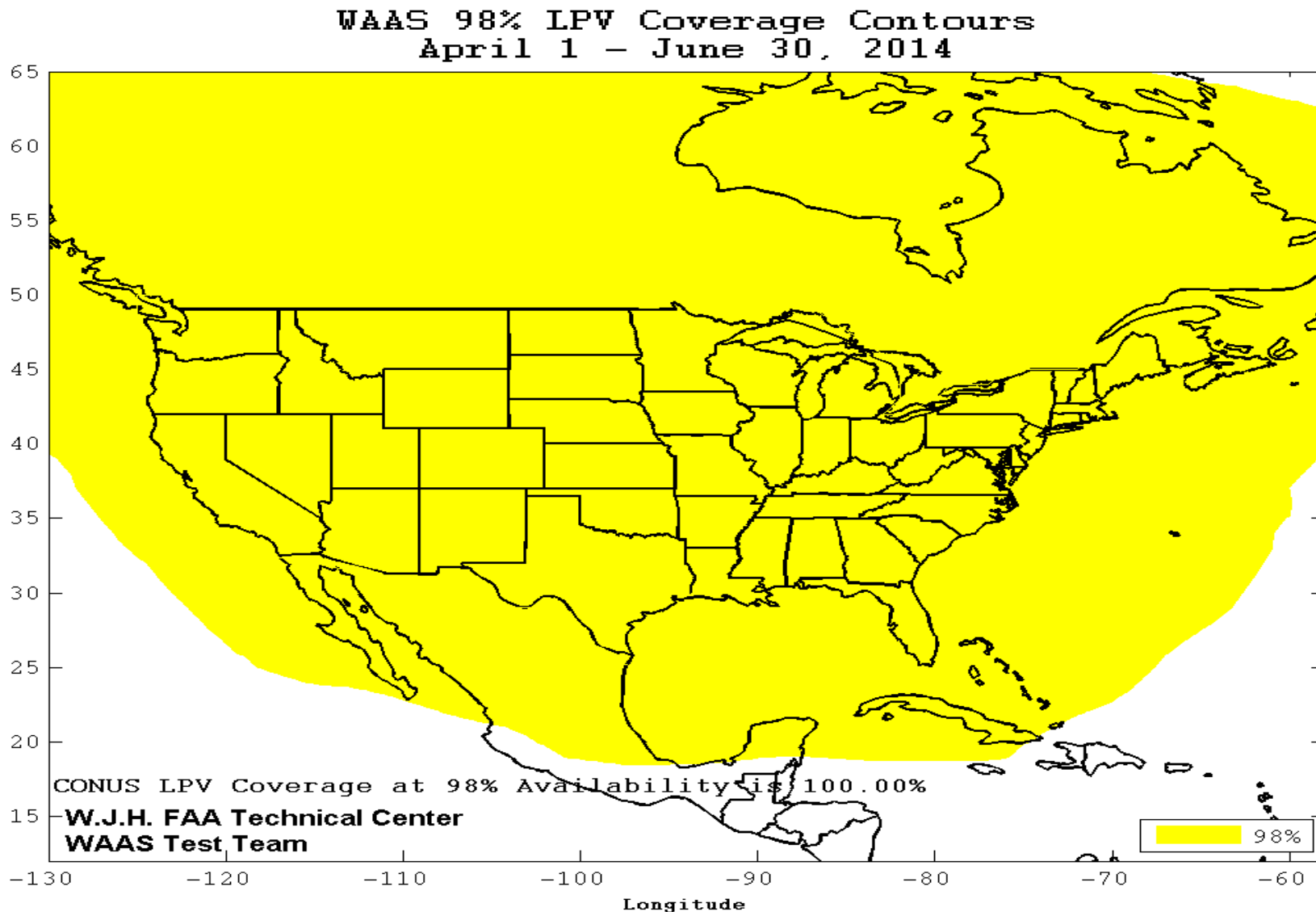


Figure B-4 98% Alaska LPV Availability Contour

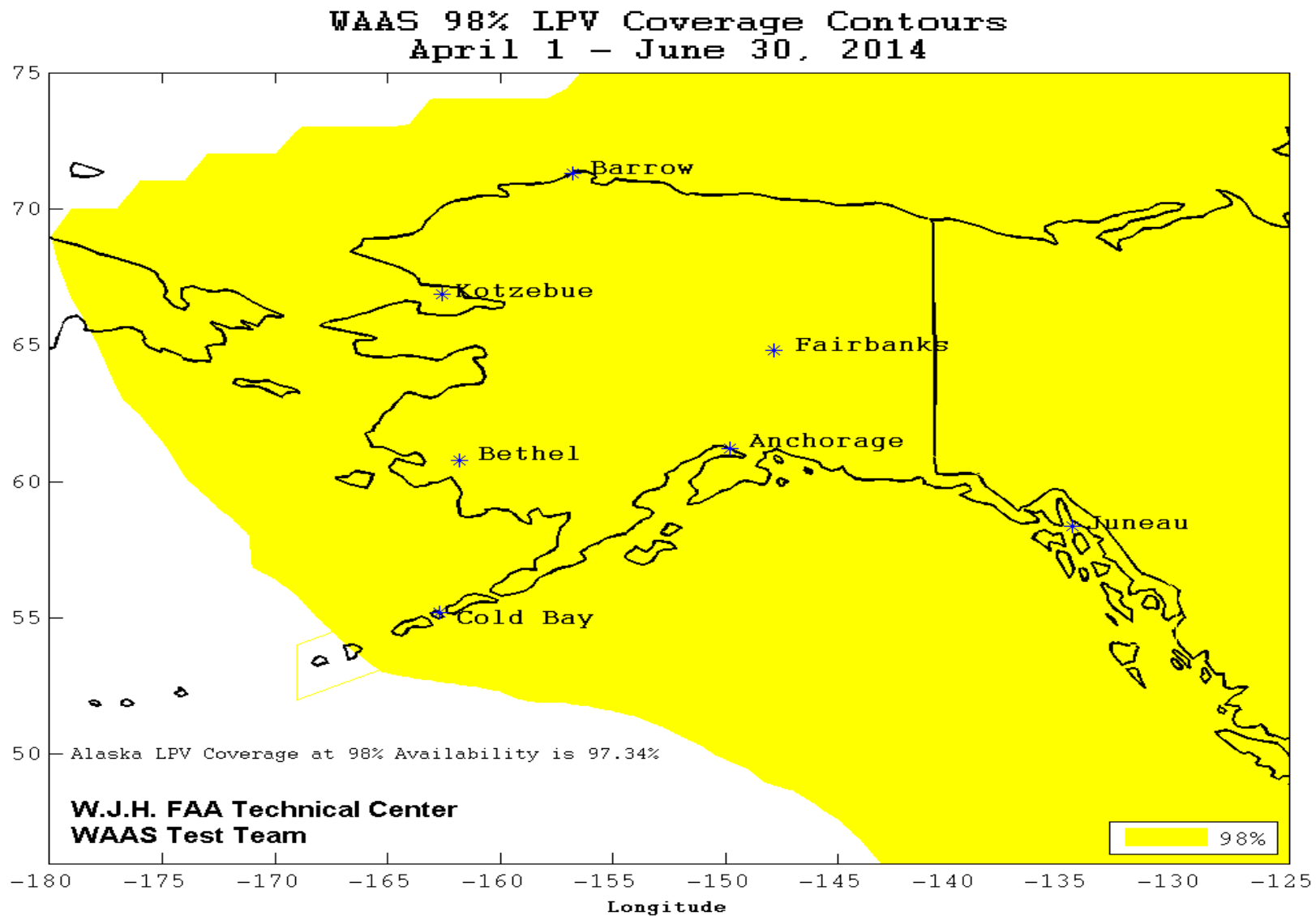


Figure B-5 99% CONUS LPV 200 Availability Contour

**WAAS 99% LPV200 Coverage Contours
April 1 – June 30, 2014**

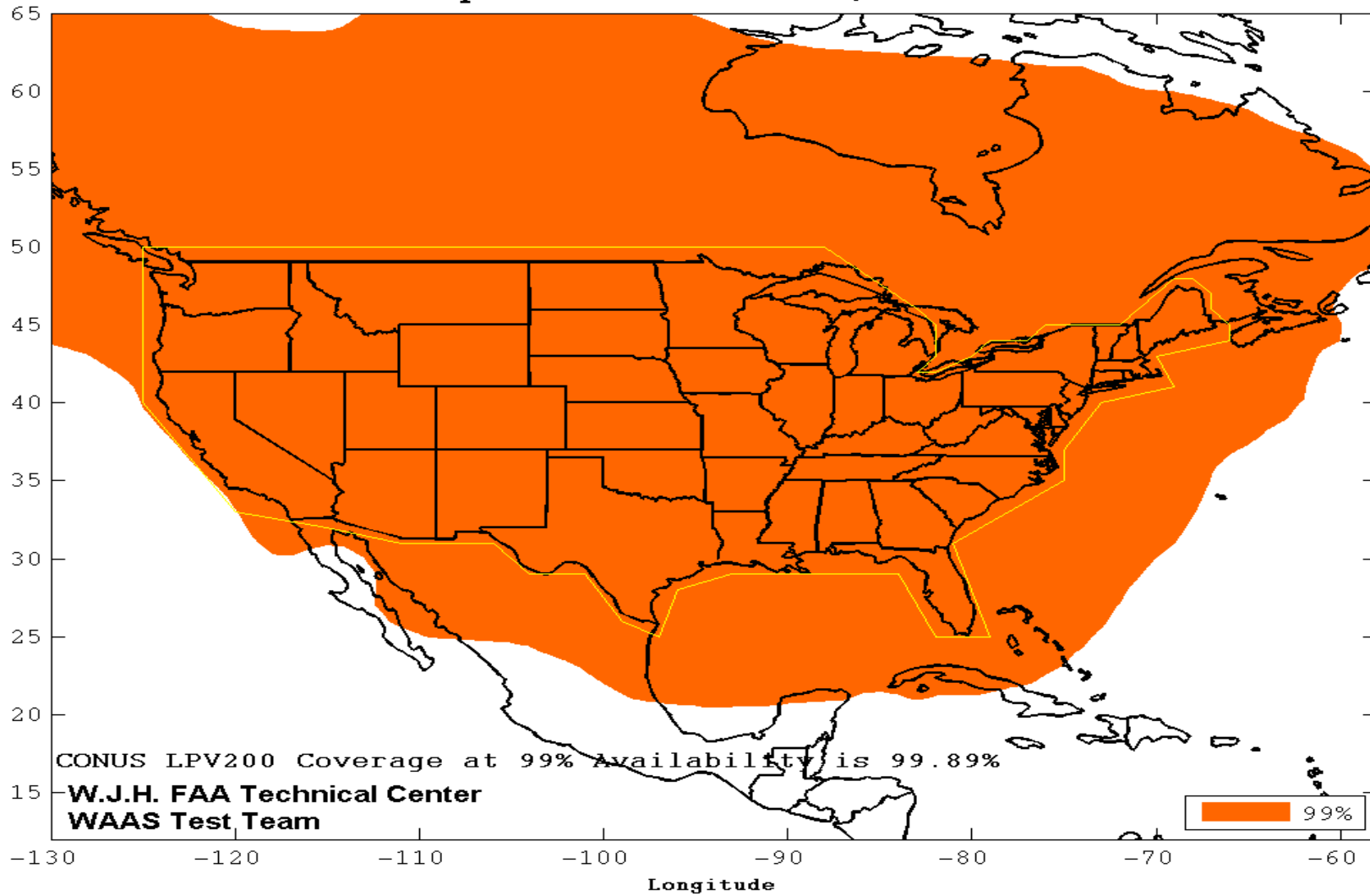


Figure B-6 99% Alaska LPV 200 Availability Contour

**WAAS 99% LPV200 Coverage Contours
April 1 – June 30, 2014**

